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NHS Intermodal Freight Connectors

A Report to Congress

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16. Abstract

Section 1106(d) of the Transportation Equity Act for the 21 st Century (TEA-21) directed the Secretary of Transportation to conduct a review of the National Highway System (NHS) freight connectors that serve seaports, airports, and major intermodal terminals and report to Congress. The objectives were to: (1) evaluate the condition of NHS connector highway infrastructure to major intermodal freight terminals; (2) review improvements and investments made or programmed for these connectors; and (3) identify impediments and options to making improvements to intermodal freight connectors.

The Federal Highway Administration undertook a field inventory of the NHS connectors in the fall of 1998. There were 616 intermodal freight terminals (253 coastal and river ports, 99 airports, 203 truck/rail terminals, and 61 pipeline/truck terminals) representing 1222 connector miles. Some of the major findings were: (1) Intermodal connectors that primarily serve freight terminals have significantly more mileage with pavement deficiencies and generally exhibit inferior physical and operational performance when compared with other similar NHS facilities; (2) An analysis of investment practices shows a general lack of awareness and coordination for freight improvements within the State and MPO planning and programming processes; and (3) Given the pressing needs for passenger-related projects, there is little incentive for investing in freight projects that appear to primarily benefit only a small freight constituency.

the report identifies options for improving the connectors and freight flow efficiency in four areas: (1) Awareness and Coordination -- improving the planning and implementation of freight projects; (2) Information Technologies -- alternatives to building infrastructure by using "infostructure" to achieve intermodal system optimization through information technologies; (3) Funding -- presents a full range of funding mechanisms: and (4) Community and Environmental Reponsiveness -- discusses alternatives to minimizing the impact of freight operations and improvements on the adjacent communities.

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Executive Summary

Section 1106(d) of the Transportation Equity Act for the 21st Century (TEA-2 1) directed the Secretary to conduct a review of the National Highway System (NHS) freight connectors that serve seaports, airports, and major intermodal terminals and report to Congress by June 9, 2000. The Federal Highway Administration (FHWA) conducted this study with the following objectives: (1) evaluate the condition of NHS connectors to major intermodal freight terminals; (2) review improvements and investments made or programmed for these connectors; and (3) identify impediments and options to making improvements to the inter-modal freight connectors.

Background

NHS freight connectors are the public roads leading to major inter-modal terminals. The connectors were designated in cooperation with State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) based on criteria developed by the FHWA and the U.S. Department of Transportation. The criteria considered the level of activity of an inter-modal terminal and its importance to a particular State. There are 5 17 freight-only terminals on the NHS which include 253 ports (ocean and river), 203 truck/rail terminals, and 61 pipeline/truck terminals. In addition to these freight-only terminals, 99 major freight airports, which handle both passenger and freight, were included in the list of NHS connectors that were inventoried. These 616 inter-modal freight terminals represent 1,222 miles of NHS connectors.

The NHS carries approximately 75% of commercial truck vehicle miles of travel. In 1997, trucks moved 58% of total U.S. freight tonnage representing almost 70% of U.S. freight value. The NHS connectors link this highway backbone to other modes of transport at their terminals, creating a national inter-modal freight system and enabling more efficient use of all freight modes. Despite the fact that connectors are less than 1 percent of total NHS mileage, they are the "front door" to the freight community for a broad array of inter-modal transport services and options.

NHS connectors are short, averaging less than two miles in length. They are usually local, county or city streets and generally have lower design standards than mainline NHS routes, which are primarily Interstate and arterials. Intermodal connectors serve heavy truck volumes moving between intermodal freight terminals and mainline NHS, primarily in major metropolitan areas. They typically provide this service in older, industrialized and other mixed land use areas where there are often physical constraints or undesirable community impacts.

NHS connectors must meet changing expectations. The U.S. economy is undergoing dramatic changes, with major evolutions in manufacturing, trade, finance, telecommunications, and other key sectors. In a global economy, American

manufacturers rely on multinational out-sourcing and production. To remain competitive, they must be able to efficiently move raw materials, partially assembled products and finished goods to and from all areas of the world.

Logistics systems must be able to rapidly adjust to changing demand and inventory levels at each stage of production and distribution around the globe. Logistics systems increasingly rely on the Nation's transportation system to provide just-in-time delivery to meet production cycles. Connectors are important in defense mobilization and national security. Because of the increased reliance of the military on the commercial transportation system, and the lengthening of supply chains to sustain military units during peacekeeping and other deployments, intermodal linkage to ports and airports has become an integral part of national defense planning. The NHS and its inter-modal connectors are an integral part of these new logistics systems.

"Intermodalism" is a service intensive form of transport. The coordination of freight arrival, staging, and handoff, combined with the constrained footprints of many freight terminals in dense urban areas, places a premium on consistent and reliable service. This report addresses a small, but important component of the Nation's inter-modal freight system. Our Nation's ability to compete globally does not hinge on the NHS connectors, but our ability to recognize and effectively address connector needs within the context of our overall inter-modal freight system will have a measurable effect on our international competitiveness.

Study Findings

A comprehensive needs assessment for connectors, similar to the biennial report to Congress on the Condition and Performance of the Nation's highway systems, was not possible for this study because a comparable data system does not exist for connectors. FHWA field offices in cooperation with the State DOTs and MPOs conducted a field inventory of conditions, investment levels, and impediments to improvements on the connectors. In addition, several outreach meetings were conducted to refine and validate survey findings. Participants at NHS connector outreach meetings and in other forums, where the results of the study were presented, confirmed these general findings and provided additional input on their perceptions of the study results. The results of the survey and outreach follow:

- Connectors to ports were found to have twice the percent of mileage with pavement deficiencies when compared to non-Interstate NHS routes. Connectors to rail terminals had 50 percent more mileage in the deficient category. Connectors to airport and pipeline terminals appeared to be in better condition with about the same percent of mileage with pavement deficiencies as those on non-Interstate NHS. This may be due to the higher priority given to airport access because of the high volume of passenger travel on these roads.

- Problems with shoulders, inadequate turning radii, and inadequate travel way width were most often cited as geometric and physical deficiencies with connectors. Data were not available to directly compare connectors and other NHS routes with regard to rail crossings, lane width, and geometrics. A general comparison of functional class attributes suggests that lane width, cross section, and geometrics of the connectors would be significantly lower than on non-Interstate NHS main routes. This is consistent with the differences to be expected between NHS mainline routes, generally principal and minor arterials, and connectors, which are often functionally classified as collectors or local roads.

- The reported investment levels on all connectors were comparable with investment levels on the non-Interstate NHS (average/mile). However, most of the investment was concentrated on a small group of high-profile terminal projects such as the Alameda Corridor or the San Francisco Airport. When the top five terminals with the largest reported investment were eliminated from the database for each of the terminal types, average investment levels, on a per mile basis, were significantly lower than the non-Interstate mainline NHS.

- While the analysis showed that the intermodal connectors have significantly lower physical and operational characteristics, and appear to be underfunded when compared with all NHS mileage, it is difficult to determine the magnitude of the problem. There are currently no national, regional, or terminal activity level based design standards for intermodal access upon which to base a conclusive statement on the adequacy of investment. This lack of design standards is a significant finding in and of itself.

Impediments to Investment

As with all transport needs, funding was the most consistent concern raised in outreach meetings as a major impediment to implementing needed freight improvements. The issues with investments on the NHS connectors are similar to issues with freight investment in general. In this sense, the NHS connectors are a microcosm of the problems associated with advancing general freight improvement projects in the State and local decisionmaking processes. States and MPOs often see freight as a low priority when compared with the pressing needs of passenger travel. NHS connectors are “orphans” in the traditional State and MPO planning processes. The generally low profile of freight operations in the community, and the fact that freight operations are conducted by the private sector, creates challenges for focusing local public sector interest and resources on freight projects. Consistent with freight initiatives in general, the challenge for NHS freight connectors is competition for public transportation funding resources.

MPOs and some States often view a connector as benefiting only a small segment of its constituent population, with most of the economic and service benefits dispersed throughout other jurisdictions. Several States and MPOs have freight advisory committees or similar bodies to express freight concerns, but the translation of freight planning into a program of freight projects is problematic. Complex community issues and environmental concerns surrounding these facilities and the continuing competition for use of land in and around freight terminals in congested urban areas, especially along the waterfront, were also raised as impediments to freight improvements. Compounding this is the lack of quantitative tools that allow local and State governments to properly evaluate the economic benefits of freight investment, including NHS connector investments, to the region and Nation as a whole. The lack of a constituency to champion connector and other freight oriented initiatives, combined with the lack of public understanding in the role these connectors play in the economic health of local communities and regions, make successful intermodal freight development a challenging task.

Charting a Course for Overcoming Impediments

Appropriate areas of consideration to enhance NHS connector focus within the statewide and metropolitan planning and programming processes were identified. There were four major issues identified for further examination in the field survey conducted by FHWA for this report, and in outreach sessions involving private sector freight interests, port and airport authorities, States, and MPOs. The four issue areas are: 1) the need for increased awareness of the role of the connectors; 2) the examination of funding options; 3) application of Intelligent Transportation Systems (ITS) and other technologies to improve the operational linkage of connectors with terminals and other freight modes; and 4) the community and environmental issues surrounding connectors and their effect on improvement options.

The following section identifies several analysis options under each issue area. The options listed for the issue areas are not a definitive list of analysis options. They respond to general concerns raised in the field survey and in outreach meetings. They are included for illustrative purposes only and as a point of departure for further discussion and examination. *They are notpolicy recommendations.*

Awareness and coordination

Among the options that might be examined to increase awareness of NHS connector concerns and improve coordination of various stakeholder efforts are:

1) Freight planning incentive grants — In addition to existing State Planning and Research funds (SPR), supplemental grants could support States, MPOs, and multi-jurisdictional partnerships that are identifying and planning freight projects.

2) National Truck and Intermodal Network — In the early 1980s the National Truck Network (NTN) was designated. A National Truck and Inter-modal Network would be an extension of the NTN to major port, airport, rail yard, and pipeline terminals that generate high volumes of intermodal freight and would convey the significance of the connectors to the overall national network.

3) Inter-modal connector evaluations — Federally funded port, aviation or roadway studies/projects should include an evaluation of the adequacy of the NHS connectors to support projected terminal growth and identify any needed infrastructure and operations improvements to the connector(s).

Information Technologies

Outreach participants noted the need for inter-modal applications of ITS and other advanced technology (referred to as infostructure) to help provide the information critical to scheduling time dependent inter-modal movements. Freight oriented ITS can play a crucial role in inter-modal system optimization, and forestall some of the infrastructure investment requirements traditionally cited as solutions for the problems identified in this analysis. Information technologies can be applied to make more efficient use of the existing capacity of connectors by allowing drivers to be informed of gate queues, railroad crossing closings, road conditions and delays, best route information and the availability of loads. In addition, interoperability among information systems must be addressed. The Federal government should continue to encourage strategies that integrate the use of infostructure into the operation of the intermodal connectors and other major freight routes as well. In this manner, the Federal government can ensure that both the information and physical requirements for inter-modal connectivity are addressed.

Funding

The needs and capital requirements of the intermodal connectors vary extensively throughout the country. It is recommended that a full range of financing mechanisms be investigated, emphasizing innovative financing options leveraging State/local/private funds. These include: 1) a new Federal credit program, similar to TIFIA, targeted at smaller intermodal connector projects; 2) expand the eligibility of the Railroad Rehabilitation and Improvement Financing credit program to include intermodal connector projects; 3) expand or strengthen the State Infrastructure Banks program, to allow for the capitalization of an inter-modal freight connectors account with Federal-aid; 4) encourage the creation of State level credit programs or infrastructure funds for inter-modal freight connector projects; 5) connector incentive grants to overcome some of the problems encountered by the States and local areas in funding freight improvements; 6) reducing the match required for Federal funds where connectors under local ownership do not have the resources; and 7) a set-aside of NHS funds for inter-modal connector projects. State and local agency input for any proposed initiative will be sought through ongoing forums, conferences, etc.

Com m unity and Environmental Responsiveness

Environmental protection and community considerations must be integrated into the development and operation of intermodal connectors. Suggested analysis options to be examined in planning and project development for intermodal connectors include: 1) exploring mechanisms for leveraging transportation investments into local economic development opportunities; 2) taking into account the concerns of surrounding communities regarding such issues as truck traffic, air quality and noise; 3) identifying creative strategies to meet local, State and Federal environmental requirements; 4) Ensuring appropriate planning and training to enable quick response to environmental incidents; and 5) identifying funding for host communities to explore avenues to reduce the localized impacts faced by the communities surrounding major regional freight terminals and advancing the state-of-the-art for successfully integrating freight movement into the Nation's landscape and communities.

Future Direction

FHWA should assess its role in facilitating the movement of freight with the cooperation and support of those that represent intermodal perspectives on freight mobility requirements from both private and public transportation sectors. Also, given the variability in the data reported for the connectors in the inventory, a more comprehensive examination of deficiencies and investment options is desirable. This assessment should be made in consultation with the American Association of State Highway and Transportation Officials, the Association of Metropolitan Planning Organizations, the Intermodal Association of North America, the American Association of Port Authorities, and other carrier and shipper interest groups to explore options to more effectively address issues of regional and national concern. This approach will be useful to all stakeholders in incorporating the needs of the freight community in the transport project development process. This comprehensive approach is consistent with other Departmental reviews of intermodal issues, most recently the Marine Transportation System (MTS) report submitted to Congress in 1999, which cited the need for examination of NHS connectors, and the DOT report "Impact of Changes in Ship Design on Ports and Inter-modal Facilities."

I. Study Mandate and Background

Study Mandate

Section 1106(d) of the Transportation Equity Act for the 21st Century (TEA-21) directs the Secretary to conduct a review of the condition of and improvements since the designation of the National Highway System (NHS) connectors that serve seaports, airports, and other intermodal freight transportation facilities. "In preparing the report, the Secretary shall review the connectors and identify projects carried out on those connectors that were intended to provide and improve service to an intermodal facility and to facilitate the efficient movements of freight, including movements of freight between modes. If the Secretary determines on the basis of the review that there are impediments to improving the connectors serving intermodal facilities, . . .the Secretary shall make any appropriate recommendations as part of the Report to Congress."

The FHWA conducted this study with the objectives to: 1) evaluate the condition of NHS connector highway infrastructure to major intermodal freight terminals; 2) review improvements and investments that have been made or are programmed for the connectors; and 3) identify impediments to making improvements to the intermodal freight connectors and approaches to overcoming the impediments. NHS connectors to intermodal passenger facilities were not specified in Section 1106(d) of TEA-21, and are not a part of this study.

Background

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) created a new policy framework for addressing national infrastructure into the 21st century. For the first time, intermodal policy was established as a cornerstone of Federal surface transportation programs. ISTEA made it national policy to "encourage and promote development of a national intermodal transportation system in the United States to move goods and people in an energy efficient manner, provide the foundation for improved productivity growth, strengthen the Nation's ability to compete in the global economy, and obtain the optimum yield from the Nation's transportation resources."

ISTEA called for the establishment of the NHS. It specified that the "purpose of the National Highway System is to provide an interconnected system of principal arterial routes which will serve major population centers, international border crossings, ports, airports, public transportation facilities, and other major travel destinations; meet defense requirements and serve interstate and inter-regional travel." As part of the effort to establish the NHS, American Association of State Highway and Transportation Officials, the State Departments of Transportation (DOTs) and the MPOs, in cooperation with the

Federal Highway Administration (FHWA), identified inter-modal terminals that warranted a connection to the NHS. The NHS system includes the Interstate Highway System and other principal arterials, the defense Strategic Highway Network (STRAHNET) and its connectors to military installations, and strategic transportation hubs identified in cooperation with the States and MPOs.

In 1997, NHS mileage carried 1 trillion or 45percent of the vehicle miles traveled (VMT) in the U.S. on 4% of the Nation's total public highway mileage. The roads on the NHS, therefore, represent the backbone of the Nation's freigh t network.

While there was an attempt to serve major intermodal terminals, there was little public sector knowledge of inter-modal facilities, minimal guidance, and widely varying approaches taken in defining major inter-modal facilities by the States. The task of identifying inter-modal terminals with any consistency among States proved difficult. By the time the proposed National Highway System was submitted to Congress in late 1993, the FHWA and the U.S. Department of Transportation (DOT) realized that the effort in this area was inadequate and that the task of identifying connectors needed to be revisited.

Two years later, when Congress passed the NHS Designation Act of 1995, it directed the Secretary of Transportation to submit a revised list of inter-modal connectors to Congress. To avoid the initial problems encountered in designating connections between inter-modal terminals and the NHS, FHWA worked in cooperation with the States and MPOs to develop guidelines for the designation of inter-modal connectors. In April of 1995, FHWA issued *"Guidelines for Identifying National Highway System Connectors to Major Intermodal Terminals.*[1]*"* These guidelines, outlined in Appendix A, specify the designation criteria for both nationally significant facilities (primary criteria) and for facilities important to a particular State (secondary criteria). The guidelines include criteria for both freight and passenger intermodal facilities for completeness even though passenger facilities were not part of this study.

The term "'intermodal" is defined for this study as using more than one mode in moving a person or goods. As an example, for freight, rail to truck transfer terminals qualify as intermodal whereas "transshipments" within the same mode (i.e., truck to truck or rail to rail) would not. A "seamless" intermodal transfer is one that occurs in a timely and efficient manner, without delay. Intermodal connectors arepublic roads linking intermodal terminals to the existing NHS. For purposes of this report, the terms NHS connector and intermodal connector are interchangeable.

[1] FHWA, April 14, 1995 memorandum, Guidelines *for Identifying National Highway System Connectors* to *Major Intermodal Terminals,* HEP-10.

Primary criteria define a "major" inter-modal freight connector by activity level (i.e., truck or freight volumes). A major freight intermodal terminal must generate enough truck traffic (e.g., 100 trucks per day in each direction) on one or more of the principal routes serving an intermodal facility, to be considered nationally significant.

Secondary criteria consider the importance of an intermodal facility to a State. This criteria permits the designation of intermodal terminals that handle more than 20 percent of freight or passenger volumes by mode within a State and have a significant volume arriving and departing on the NHS connector (rather than primarily a transshipment terminal). Also, included under the secondary criteria were intermodal terminals recognized by the State or MPO as an important facility and targeted for major investments to handle expanding traffic.

Based on these guidelines, connections to 1,407 major freight and passenger terminals were identified by the States and MPOs based on the criteria established by DOT, totaling 2,032 miles. The list of freight connectors, along with passenger terminal connectors, was submitted to Congress in May of 1996. TEA-2 1, enacted June 9, 1998, designated the intermodal connectors as part of the NHS. In addition, the Congress directed FHWA to conduct a study of the conditions on NHS intermodal freight connectors, emphasizing the crucial role that the connectors play in our Nation's inter-modal freight transportation system.

Table 1 shows the number of freight connectors by terminal type. There were 5 17 freight terminals (river and ocean port, rail, and pipeline). In addition, 99 major freight airports, most of which handle both passenger and freight, were identified in cooperation with FAA. There were a total of 1,222 miles of connector roadway inventoried by the States for 616 terminals. Some high volume terminals warranted multiple connectors while others terminals had direct connections to the NHS with zero mileage for connector length. A listing of freight intermodal connectors by State is included in Appendix C.

Table 1: INTERMODAL FREIGHT TERMINALS

Connector Type	Terminals	Miles
Ports (ocean and river)	**253**	**532**
Airports	99	221
Truck/Rail Terminals	**203**	**354**
Pipeline/Truck Terminals	61	115
Total Number of NHS Freight Terminals	**616**	**1222**

Strategic Planning

In full recognition of these concerns for national security and international competitiveness, U.S. DOT and FHWA have adopted strategic planning initiatives that articulate our Nation's vision for intermodal transport and point the direction for program initiatives to fulfill this vision.

The U.S. Department of Transportation seeks to "serve America by ensuring a safe, efficient, accessible, and convenient transportation system that meets our vital national interests and enhances the quality of life of the American people, today and into the future."[2] FHWA's vision is "to create the safest and most efficient and effective highway and inter-modal transportation system in the world for the American people.. ."[3]
The U.S. DOT Strategic Plan focuses on mobility, safety, economic growth and trade, the human and natural environment and national security.

[2] US Department of Transportation, *Performance P/an for Fiscal Year 2000,* p. 2.
[3] US Department of Transportation, Federal Highway Administration, 7998 *FHWA National Strategic Plan,* p. 3.

II. NHS Intermodal Connectors: Their Role in Freight Movement and Emerging Challenges

NHS Intermodal Connector Role in Goods Movement

NHS inter-modal connectors are critical components of the Nation's freight system that tie modes together and facilitate distribution of products to users. They are key links integral to achieving a U.S. transportation system that will seamlessly move goods within regions, across the country and throughout the world.

They are relatively short, averaging less than two miles, and are usually local, county, or city streets designed to lower standards because they carry less volume at lower speeds than the typical mainline NHS route (primarily Interstate and Principal Arterial). These connectors, however, must be able to handle heavy large trucks moving between the terminals and mainline NHS system or to other terminals for transfer to other modes (i.e., from port to rail yard). Those in poor condition or those that have design deficiencies can slow freight movement, damage goods in transit, decrease efficiency and negatively impact safety. A well-designed and maintained inter-modal connector will allow freight to move efficiently to and from the terminal.

Inter-modal connectors, as part of the overall freight system, carry the full range of commodities, from high value container shipments to low value, bulk moves. They carry items found in retail stores, the materials used in factories and hospitals, the supplies and express, overnight packages for offices and businesses, crops from farms, forests and orchards, coal and petroleum products, etc. While the movement of freight provides the essentials for daily living, freight movements (primarily trucks) often conflict with local vehicular traffic and compete for roadway space.

NHS Intermodal Connector Role in Military Deployments

The intermodal connectors also support defense mobilization and national security. The military is becoming more reliant on the commercial transportation system, utilizing ports, airports, rail, and highways to transport supplies and personnel in both peacetime and mobilization efforts. DOD is already a major user of commercial services, spending $2 billion annually on freight services alone. Further, the military anticipates that it will rely on commercial providers for 90 percent of its peacetime movements and 85 percent of its wartime movements.[4]

Looking into the future, DOD has a requirement that by 200 1, the military must be able to respond to two geographically divergent major regional contingencies, each the size of Desert Storm, at nearly the same time. This translates into the need to ship 7,000

[4] *National Conference on Setting an Intermodal Transportation Research Framework,* Transportation Research Board, Conference Proceedings 12, 1997.

containers a week, along with troops and rolling stock movements, most of which will travel on NHS intermodal freight connectors. More than 3.5 million tons were moved as part of Desert Storm/Desert Shield, which is roughly the equivalent of moving the entire city of Atlanta (people, their belongings and cars) half way around the world. National defense mobilization and deployment is increasingly reliant on the NHS connectors to project U.S. military power abroad to meet the challenges of regional conflicts and other defense missions. With redeployment of U.S. military units stateside, logistics supply lines are longer and each portion of the line is expected to meet time sensitive mobilization requirements.

Emerging Issues and Changes in the Freight Industry

The NHS connectors face a series of critical issues and challenges in the 21st century. Industry changes frame the overall business context under which the inter-modal connectors are developed and operated. Within that business context, there are issues specific to the development and operation of the intermodal connectors. The freight industry and the intermodal movement of goods are undergoing radical changes. Inter-modal connectors will need to be responsive and flexible as distribution and logistics strategies evolve and new technologies, equipment and vehicles are deployed. These changes will affect route and mode selection and the amount and composition of freight and vehicles moving over the NHS connectors. The major changes reshaping freight transportation are business practices and the qualities sought in freight transportation services.

The remainder of this Chapter is summarized from an FHWA-commissioned report "The Role of the National Highway System Connectors: Industry Context and Issues". It identifies some of the overarching changes in the U.S. freight industry and business models that will create future challenges for the NHS connectors and the Nation's ability to harness and use its freight transportation infrastructure to meet customer requirements.

Changing Business Practices

In the past few decades, the U.S. economy has undergone changes as dramatic as those that occurred during the industrial revolution. These changing business practices are a reflection of major evolutions in key economic sectors, such as manufacturing and trade. Much of this restructuring, changing the way businesses operate, was not only brought about by transportation efficiencies but is also increasingly dependent on it.

Restructuring of traditional manufacturing and globalization: To maintain competitive advantage, manufacturers are continually searching for opportunities to restructure their operations. They are consolidating production at fewer and lower cost

locations, and reducing inventory-carrying costs by limiting inventories of supplies and parts used in manufacturing and moving production directly into supply chains. This downsizing and restructuring has required them to modernize their manufacturing and distribution systems to become far more efficient and reliable than in the past.

In our global economy, American manufacturers increasingly rely on multinational production. They must be able to efficiently move raw materials, partially assembled products and finished goods to and from all areas of the world to remain competitive. Consequently, logistics systems must be able to rapidly adjust to changing demand and inventories during the various stages of the production and distribution cycle around the globe. The NHS connectors are an integral part of these new logistical systems.

Production runs and just-in-time (JIT) delivery: As the value of products have increased, one way to lower overall costs has been to reduce the amount of inventory on hand both in production and distribution. With the uncertainty of demand levels resulting in larger or smaller-than-required inventory levels at certain times in the economic cycle, manufacturers have adopted techniques that permit rapid adaptation to changes in demand. An important factor in reducing overall costs is to achieve a delicate balance between maintaining an adequate inventory and the volume of production runs.

Responding to specialized consumer preferences and tastes, manufacturing now involves smaller, shorter production runs. Companies have adopted techniques that permit the production of a variety of goods, aimed at various market segments, with the same production line. These new production processes require the ability to receive inputs just in time.

This emphasis on reducing inventories requires more frequent, smaller shipments. The transportation infrastructure-including the connectors-must be able to function reliably so that businesses can count on their deliveries being on time, with minimal delays due to congestion at or near intermodal terminals.

E-commerce: The development of new computer and Internet technologies has created a revolution in how businesses communicate and consumers shop. For example, the "*1998/1999 Boeing World Air* Cargo *Forecast"* noted that "consumers are increasingly using the Internet for home and business purchases, fueling growth in air/truck logistic networks."[5] Statistics from the 1999 holiday season confrm this trend. An analysis by VISA estimates that "Internet shoppers using its cards spent $1.47 billion this November and December, 179 percent more than in those months last year.'" Similarly, a New York Times/CBS News poll found that 17 percent of the adults surveyed bought gifts over the Internet compared with seven percent in 1998.[7] But even more significant is emerging business-to-business e-commerce. Linking businesses with suppliers is introducing more choices and competition, thereby creating savings in their purchases.

[5] *1998/1999* Boeing World Air Cargo *Forecast,* p. 17.

[6] S. Hansell, "Retailers Look Back and See Online Shopping Is Gaining," The New York Times, December 24, 1999.

[7] *New York Times,* op. cit..

The success of e-commerce rests not only with the Internet but also on the ability of the transportation system to deliver the goods ordered quickly and as promised and also making returns convenient and prompt. Accordingly, e-commerce relies heavily on an efficient, seamless freight transportation system.

Qualities Sought in Freight Transportation Services

The increasingly competitive environment in which firms must operate has fundamentally altered the use of freight transportation services and infrastructure. Businesses view freight transportation as a means for providing better service to customers, supporting their operations and for increasing efficiency as well as controlling overall costs. Businesses make decisions on freight transportation in terms of what they achieve for their firms, not as simply trucks, trains, vessels and aircraft. In fact, the actual physical movement and routing of cargo is increasingly likely to be handled by a third party logistics provider (3PL) on behalf of the firm. The 3PLs are managers of the flow of goods as they pass from origin to destination through inventory, transport, and distribution, including documentation and related material control services, on behalf of the customer. Firms seek to balance the following qualities in their freight transportation service-overall cost vs. reliability, transit time, efficiency, and damage minimization.

For example, to reduce the overall cost of production, a manufacturer can reduce inventory costs of parts needed in a production run with a marginal increase in transportation cost. This can only be achieved if transportation costs remain low and they are assured that the components arrive on time. A missing part for an assembly line could halt a production line. Since many firms no longer stockpile large inventories, the manufacturer must rely on the transportation provider as well as a reliable transportation system (e.g., congestion/incidents) to deliver the components when needed.

Inventory control has evolved into the concept of JIT delivery to reduce inventory and overall production costs. Reliability of delivery times is often written into contracts with transportation providers for exacting specifications-requiring specific delivery schedules close to 100 percent of the time. For transportation providers, meeting time definite service requirements can impact the modes and routes used. Because of the potential costs of shutting down a production line due to a late delivery, penalties can be severe, ranging from monetary fines to loss of the work.

Cost vs. transit time is always a consideration in freight movement, as firms try to minimize the cost for moving goods. However, there are tradeoffs regarding cost and transit time. For example, high-value or time-sensitive freight will most likely travel by higher cost air or truck transportation to avoid in-transit inventory costs, where as low value, high volume/weight cargo will travel by cheaper ship or rail. Efficiency is achieved when optimally using transportation equipment and modes so as to minimize transit time and costs. Shippers usually focus on the overall costs of moving a shipment

from origin to destination, regardless of the number of modes involved and while relying on the transportation provider to achieve efficiency. Also, since damaged cargo is of little use, shippers and transportation providers must assure damage minimization and safety. Conditions on intermodal connectors, including pavement, road geometry, and security all affect damage minimization and safety. Carriers and customers look at overall reliability, cost, and time of the total trip from origin to destination.

Intermodal Connectors in Chicago:

Intermodal connectors in Chicago are essential links in ensuring the efficient movement between intermodal terminals and between terminals and customer, suppliers and factories. These essential movements must take place in a highly developed and congested urban setting, where roadways are also used for local goods movement and passenger transportation. The eastern and western railroads meet in Chicago, making it the leading railroad transportation hub in the country:

- Containing 27 major rail yards
- Performing 5.5 million annual lifts
- Consisting of 10.3 million twenty-foot-equivalent containers (TEUs)
- Generating 14,200 daily truck moves related to distribution and re-distribution of trailers and containers.[8]

International and domestic goods move through these rail yards. However, the major railroads are not interconnected, requiring containerized cargo to be trucked between rail yards. Local and regional distribution takes place from these rail yards, generating thousands of truck trips to and from suppliers, factories, and customers. Bulked rail cars are transferred at the Chicago Belt Railway yard, but inter-modal trains require the containers to be transferred by rubber tire. In addition, residents and businesses along the route must endure the trucks and congestion associated with its existence. Fifty-five of the 616 NHS inter-modal terminals are in Chicago. This presents a unique challenge to the State and local officials.

Further, the development, operation and maintenance of the connectors serving the rail yards are largely the responsibility of the municipality, which must consider all of the transportation needs in Chicago. This situation demonstrates the need for collaboration between public sector agencies and the private freight sector stakeholders, who operate the intermodal terminals and transport cargo via the NHS connectors, to ensure the efficient and seamless movement of freight. FHWA has funded a special study in Chicago to bring together all the parties to develop a process for identifying Connector needs and advancing priorities into the programming process.

[8] Source: Chicago Area Transportation Study (CATS), Statistics for 1998.

III. Condition and Investment Analysis

Data needed to respond to the requirements of the study objectives were identified for the following categories: physical condition, investments, and the investment process, including an assessment of impediments to making needed improvements on the NHS connectors. A preliminary review of available data sources and information revealed little consistent and reliable information on the connectors. This was primarily because NHS connectors were only recently designated and existing data systems were in the process of incorporating them. Because of this fundamental lack of objective information, and because of the variety of NHS connectors under review, FHWA undertook a field inventory of the connectors.

A sampling approach to data collection was considered, but since most States had fewer than 10 connectors, it was decided that all the connectors would be inventoried. Also, because of the way different types of intermodal terminals are operated, their ownership, eligibility for federal funding and their treatment in the planning process, data was collected and analyzed by terminal type (port, airport, railhead, and pipeline terminal). Because of the general lack of available information and the possible burden on FHWA field offices, the field inventory form was designed to be completed with available data or on a single field visit. A draft inventory form was developed, field tested, and a focus group was convened to provide input before the inventory form was finalized. The inventory form, including detailed item-by-item instructions, is included in Appendix B.

The inventory form was developed in cooperation with key individuals with experience and expertise in terminal access issues from the Federal Railroad Administration, the Office of the Secretary, the Maritime Administration, State DOTs, MPOs, terminal operators, and FHWA field staff. A steering group comprised of representatives from these organizations was convened for input on the study approach and data availability. Industry representatives from the American Association of Port Authorities (AAPA), the Inter-modal Association of North America (LANA), American Association of State Highway and Transportation Officials, the National Industrial Transportation League and the Association of Metropolitan Planning Organizations (AMPO) were also consulted and provided their views on the study conduct.

Field Data Collection

The FHWA Division Offices, located in each State, were assigned the task of data collection. The field data collection for physical conditions relied heavily on the observations and judgment of the data collector. The reporting of investment data also requested an evaluation of the planning and programming processes at the statewide and metropolitan levels to identify impediments to making improvements on the connectors. Our FHWA Division Offices conducted this effort in cooperation with the State DOTs and MPOs.

While the study focused on the recently approved NHS connectors, there were some States that had connectors to major intermodal terminals "previously approved" in the initial 1995 designation of the NHS. Since these terminals were already served by an NHS connector, they were not included in the connector designation process initiated in 1996 and were never designated as "NHS connectors". Since the study was directed at designated connectors, "previously approved" connectors were not required to be part of the study. However, it was requested that "previously approved" connector-like facilities be treated as regular connectors and included in the inventory. Relatively few "previously approved" connector-like facilities were not included in the inventory.

Data collection procedures varied from State to State depending on the availability of information on hand and the cooperation of the States and MPOs. Much of the information was obtained from existing data sources maintained within the State DOTs, MPOs, and local jurisdictions. In most cases, some on-site visits were needed to supplement these available sources. Where on-site visits were necessary, a team approach involving FHWA Division, State DOT, MPO, local jurisdiction and terminal operator representatives was used. The team approach was adopted as the preferred way to obtain the required information in a cooperative manner. Also, because of the reluctance of some terminal operators to provide proprietary input that might become public, it was agreed that the results for individual connectors would not be published.

Information on investments was critical to the study. There were difficulties, however, associated with getting complete investment data, especially where local and private sector funding was involved. Metropolitan Transportation Improvement Programs (TIPs) and Statewide Transportation Improvement Programs (STIPs) were the primary source of information for planned improvements to the connectors in the next three years. Since not all improvements are listed as separate projects on the TIPs and STIPs, this information had to be supplemented with input from local agencies or private sources, or discussions with terminal operators where possible.

Analysis of Physical Infrastructure

The on-site inventory looked at the physical condition of the connectors. There were four major areas: 1) Pavement condition; 2) Geometric and physical features; 3) Railroad crossings; and 4) Traffic operations and safety. Much of the analysis is based upon the engineering judgement in the field inventory on the adequacy of service the connectors were providing for truck traffic. The percents given in the analyses are the percent of miles determined inadequate in the field inventory.

Pavement Condition

The rating of pavement was broken into five categories and is primarily based on an assessment of the influence of the speed at which a commercial truck can comfortably travel. The pavement rating guidance is shown in Table 2.

Table 2
Pavement Rating Guide

Very good	Newly built or resurfaced and distress free.
Good	Smooth surface with little to no cracking or rutting.
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed on the connector.
Poor	Same problems as fair but worse, causing some reduction in speed.
Very poor	Major problems with potholes etc., causing substantial reductions in speed.

Pavements rated as poor and very poor are the most important for purposes of physical assessment. Pavements rated in these categories cause reductions in the speed and efficiency of commercial vehicles using a facility and may also damage the vehicle and its contents. Because of the effect of poor and very poor pavements on speed, they are considered past due for resurfacing. Very poor pavements will generally require full pavement reconstruction to restore serviceability.

The pavement condition data from the inventory were grouped in the following categories: very good/good, fair, and poor/very poor. Table 3 shows the percent distribution by these categories for all connectors inventoried.

Table 3
Pavement Condition Ratings for Inventoried Connectors
(% Connector Mileage)

Very good/good	51%
Fair	37%
Poor/Very Poor	12%

For All NHS Mileage - Poor/Very Poor 8%

By way of comparison, an estimated 8 percent of all NHS mileage reported through the Highway Performance Monitoring System (HPMS) was rated as poor/very poor. Table 4 shows poor/very poor pavement condition by terminal type.

Table 4
Poor/Very Poor Pavement Ratings by Terminal Type
(% Connector Mileage)

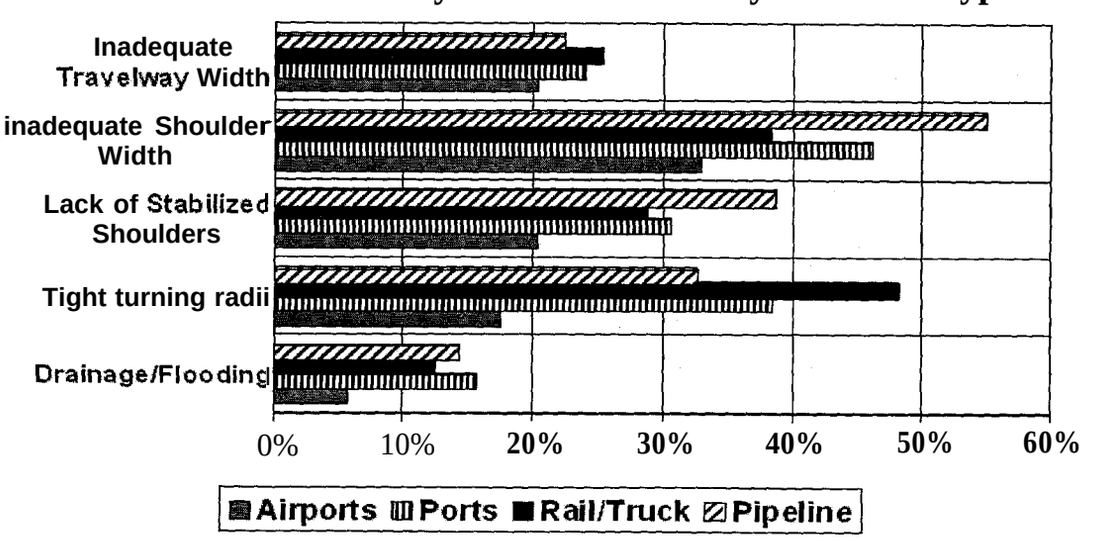
Terminal Type	Poor/Very Poor
Airports	7%
Truck/Pipeline	7%
Ports (ocean and river)	15%
Truck/Rail	12%

Poor/Very Poor pavement condition ratings for airport and pipeline terminals show a slightly better than average ratings of 7 percent (vs. 8 percent for all NHS). Significantly worse than the NHS average of 8 percent are connectors serving rail/truck terminals with a 12 percent poor/very poor rating and coastal and river ports with a 15 percent poor/very poor rating. This is likely due to the fact that most of the ports and all the rail facilities are privately owned terminals and their intermodal connectors are primarily serving truck traffic to these facilities. Airport connectors have a satisfactory rating (when compared with the all NHS average) probably because they are primarily serving passenger traffic with relatively few trucks.

Geometric and Physical Features

A list of physical features was evaluated, as part of the field inventory, for deficiencies. Inadequate shoulder width, turning radii, lack of stabilized shoulders and inadequate travel way width were the most prevalent problems found. The top 5 problems by terminal type are shown Figure 1.

Figure 1
Geometric and Physical Deficiencies by Terminal Type

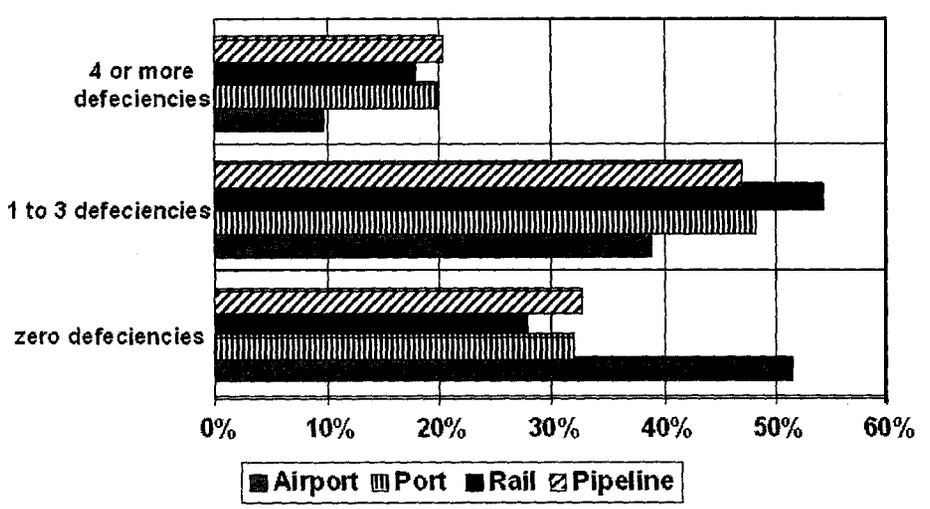


Problems with the shoulders showed the highest frequency of problems for geometric and physical inadequacies. Inadequate shoulder width identifies roadways with insufficient width or strength to accommodate a parked truck without hindering traffic flow. Often trucks are required to wait outside terminal gates prior to the terminal opening or during congested periods of the day or they may have to stop for safety or other reasons. The lack of shoulders for parking can cause partial blocking of a travel lane when a truck parks or is disabled. This is both an operations and a safety concern. Lack of stabilized shoulders can also cause roadways to wear prematurely due to frequent heavy truck loadings at the pavement edge causing the transfer of stresses to adjacent unconsolidated shoulder material. This can undermine the paved surfaces at the edge of the lane, accelerating wear on otherwise normally adequate pavements.

"Tight turning radii" will force trucks to make wide turns into adjacent lanes or onto curbs to negotiate an intersection due to obstructions at the comer. This presents an operations problem because of the delays caused by the truck maneuver as well as a safety hazard. Tight turning radii also result in physical damage to roadways, poles, curbs, and gutters and increases vehicle operating costs due to the cumulative damage to trucks.

Inadequate travel way width suggests that the roadway width is not adequate for two-way truck traffic, imposing safety and operational deficiencies to vehicles using the facility and for adjacent land uses such as on-street parking for residential and commercial properties. Drainage problems typically occur in low-lying areas, primarily approaching coastal and inland ports, where periodic roadway flooding was cited as a significant problem. In many cases, more than one physical deficiency was noted. As shown in Figure 2, most connectors had multiple geometric and physical deficiencies.

Figure 2.
Multiple Geometric and Physical Deficiencies by Terminal Type

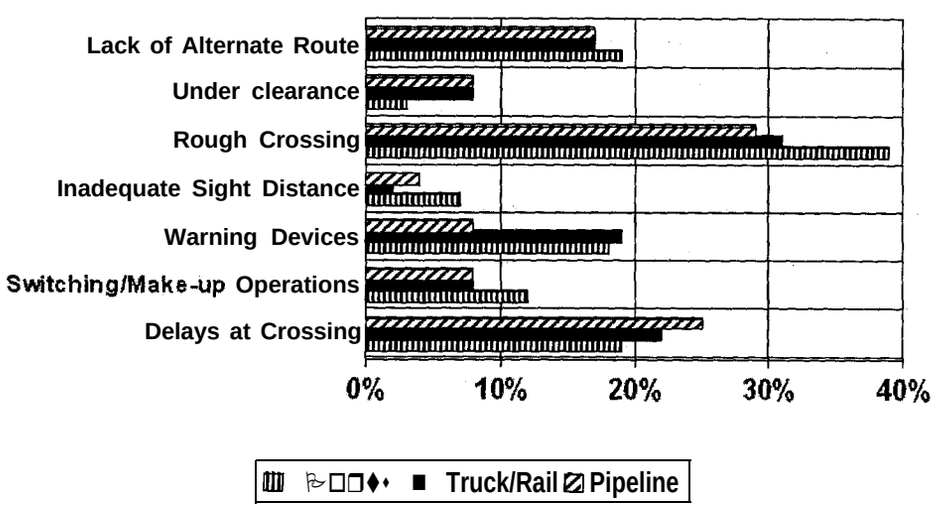


Almost half the terminals have at least 2 deficiencies and 1 O-20 percent show 3 or more deficiencies. Any one of these conditions is a problem where frequent truck traffic is present.

Railroad Crossings

Because of the presence of active railroad crossings near or adjacent to most freight terminals and their possible impact on safety and potential to cause traffic operational problems, they were evaluated as a separate category. There were 250 connectors with active crossings and half of those had railroad crossing inadequacies. These are shown in Figure 3.

Figure 3.
Railroad Crossing Deficiencies

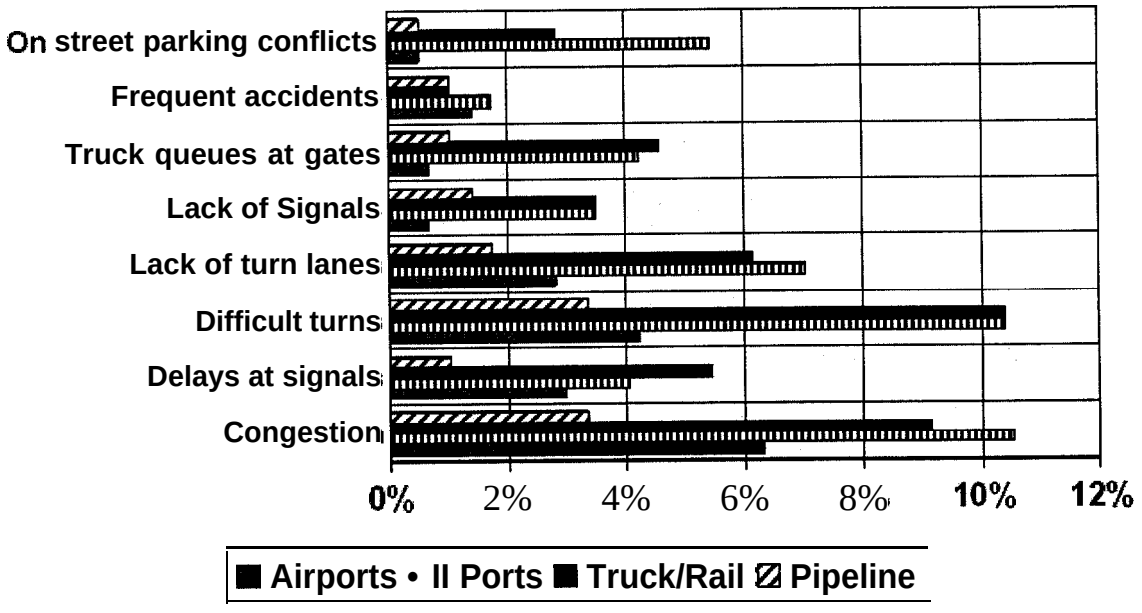


The most common railroad crossing deficiencies were rough crossing profiles and delays at crossing (28 to 39 percent of crossings). Rough crossing profiles are created by uneven surfaces between the roadway and the rail track, causing trucks to slow significantly to avoid damage to cargo and vehicle. Delays at crossings (19 to 25 percent of crossings) occur when train movements in and around terminals create interferences with highway movements. This interference often extends several blocks due to the length of trains, and impacts movements throughout the local area. Other identified deficiencies included substandard crossing warning devices and lack of alternative routes if blocked by a train (extended delays where a train blocks all access routes to the facility). Lack of alternate routes, delays at crossings and switching/make-up operations can seriously affect the operation of a terminal by blocking a connector completely. The remaining items indicate a significant number of unsafe or substandard crossings.

Traffic Operations and Safety

Over half of the freight connectors exhibited safety and/or operational problems. Figure 4 shows these deficiencies by terminal type. Heavy traffic, difficulty making turns and lack of turning lanes were the most prevalent problems causing congestion on the connectors. Delays at traffic signals, on-street parking conflicts, truck queues at facility gates, frequent accidents, and lack of signals are also shown.

Figure 4
Traffic Operations and Safety Deficiencies by Terminal Type



Investment Information

Information on improvements and investments made were reported for the three-year period prior to the inventory, 1995-l 998, and for improvements and investments programmed for the following three years, 1999-2001. Table 5 shows funding by source.

Table 5
NHS Connector Funding by Source ($ millions)

	Past 3-Years 1995 – 1998	Next 3 -years 1999 -2001
Federal	$231	$457
State	$ 82	$263
Local	$134	$189
Private	$135	$ 40
Total	$582	$949

The investment levels by terminal type and funding source were compiled from available State and MPO programming documents and other available sources. It shows significant increases programmed for the "next 3-years", relative to the "past 3-years". This most likely reflects increased program authorizations made available through TEA-21, which increased Federal funding by 40 percent relative to ISTEA, and increased recognition by the States and MPOs of the connectors in the planning and programming process. These investment levels reported by the survey are estimates and should not be construed as a census of all connector expenditures.

The amounts by terminal type are shown in Table 6. While a significant increase in spending is apparent, it is abstract without knowing what level of investment is required for adequate service. To make a comparison with the level of investment on the NHS mainline facilities, the annual investments were calculated on a per-mile basis.

Table 6
NHS Connector Funding by Terminal Type ($ millions)

	Past 3 -years	Next 3-years
Airport	$230	$247
Pipeline	$ 19	$ 32
Port	$208'	$401
Truck/Rail	$125	$269
Total	$582	$949

The above funding amounts shown appear to be improving, however, they do not represent what is actually occurring on the vast majority of connectors. For example, the Alameda Rail Corridor and the San Francisco Airport Connector are complex, extensive improvements to local networks that are not representative of investment activity on a typical connector. When the top five (for each terminal type) of these types of cost-intensive projects are removed from the database of NHS connector investments, the results change significantly.

Table 7
Annual Investment Levels Per Mile

Terminal Type	Past 3-Year	Past 3-Year (Without Top 5)
Airport	$346,900	$78,900
Pipeline	$ 55,400	$ 11,600
Port	$136,100	$40,600
Truck/Rail	$117,800	$ 65,600

Average for All Non-Interstate NHS Mileage $102,100/mile

Table 7 shows annual investments per mile by terminal type for the past three years beginning in 1995 (through 1998). When comparing to an average annual investment of $102,100 per mile on all non-Interstate NHS routes, the investment levels for the NHS connectors shown in the first column, compare favorably.

The last column in Table 7 shows investments for the three-years since 1995 *without the top Jive projects reporting the highest level of investment* for each terminal type. Without the top 5 projects, the average annual investment for all terminal types drops significantly. The level of investment for ports appears to be very low ($40,600/mile), less than 40 percent of the average for all the NHS ($102,100/mile), especially since ports exhibit the most deficiencies overall. Investments in truck/rail terminal connectors decline less dramatically, probably because of a significant amount of work associated with the recent rail mergers in modernizing and relocating terminals. While airport connectors appear to be in relatively good condition, investments in airport connectors also lag given the importance of air travel to a community, the expected growth in air travel, and the co-location of many air freight and passenger facilities. Pipelines are reporting the lowest levels of investments but it is difficult to make any conclusions since little is known about them.

For the 1999 *Oregon Highway Plan,* the Oregon Department of Transportation identified needed improvements to their intermodal connectors on the NHS. Identification of needs was based on local and regional transportation plans, improvement programs, environmental impact documents, port district plans and programs, a windshield survey, and visits with agency staff in each of the communities with intermodal connectors. Identified improvement types included:

- Pavement treatments,
- Roadway widening, reconstruction, and extension,
- Signal and channelization improvements, and
- Construction/lengthening of grade separated structures.

More detailed information *can* be found in the Oregon DOT report *Freight* Moves *the Oregon Economy,* where intermodal connector needs are estimated at $12 1 million over a 20-year period. About half of the total is for grade-separation structures, street widening, and other improvements in the vicinity of the Portland International Airport.

During the three-year period prior to 1999, Oregon's expenditures for connector improvements are estimated at $5-10 million. Over the next three years, $40 million is programmed for spending on connectors. However, most of this is for construction of a grade-separated structure and rehabilitation of an existing bridge on connectors to the marine terminals at Port of Portland.

There are currently no national, regional, or terminal based design standards for intermodal access upon which to base a definitive conclusive statement on adequacy of investment. Further examination in cooperation with major freight stakeholders of desirable practices in intermodal access design is warranted to determine the appropriate level of condition or performance for NHS inter-modal freight connectors. Without an agreed upon standard or warrant for NHS connectors, evaluations and judgments can only be made on connector investment relative to other NHS routes and on the basis of professional engineering judgment on the adequacy of connector service.

Challenges to Implementation of Intermodal Freight Connector Projects

The existing decision making process for transportation improvements in States and MPOs has primarily focused on passenger needs, with the assumption that any highway improvement also benefits freight transportation. Freight transportation constituencies are different than those for passenger and developing new public/private partnerships can be challenging. The scarcity of funds, project eligibility and differing responsibilities and perspectives between States, MPOs and local governments creates a complex administrative situation in the coordination and promotion of investments for inter-modal freight development and connector improvements. Compounding this problem is the lack of quantitative tools that allow State and local governments to properly evaluate the economic benefits of freight investment to the region and Nation as a whole. Several States and MPOs have been successful at raising freight transportation issues in the planning process but most others continue to struggle. Table 8 summarizes the jurisdictional responsibility for NHS freight connectors.

Table 8
Reported NHS Connector Mileage by Jurisdiction

Jurisdiction	Mileage	Percent
State	349	29%
Local	635	52%
State and Local (mix)	238	19%
Total	1222	100%

As shown above, responsibility for freight connectors is not consistently assumed at one jurisdictional level or another. More than half of NHS connector mileage is totally under local jurisdictional control with another 19% split between State and local. Local jurisdictions, faced with a myriad of public requirements, typically do not see freight connectors as their responsibility. Where a local road is under the control of a local jurisdiction, the State may not have the authority to spend State funds off the State system to match NHS funds or may not even see local roads as a priority. The generally low

profile of private freight operations in the community creates challenges for focusing local public sector interest in freight movement. The fact that local ownership is so high may account for the low investment levels on freight connectors.

> *It was noted at the outreach meetings that jurisdictional responsibility is only an issue if the level of government with responsibility for connectors does not have a* ***full*** *understanding of the needs of the freight community. Participants at the Newark outreach session felt that connectors would be better served under State control. In Tacoma, participants felt that local governments were closer to the problem and understand the needs of the port community, while the State has to contend with numerous other concerns and might not be able to provide the degree of focus and support needed*

The field survey also asked what factors contributed to needed improvements not being done. Responses from the survey form as to why this is occurring (in order of frequency of response) are: 1) low priority in State/MPO plans; 2) lack of local match or sponsorship; 3) lack of private sector participation; 4) neighborhood-community opposition; 5) environmental concerns; and 6) physical or other constraints.

After the initial analysis of the field inventory data was conducted, a series of outreach meetings were held to further refine and validate the results and conclusions of the analysis. Those attending these outreach meetings and in other forums, where the results of the study were presented, voiced agreement with the results and provided additional input on their perceptions of the results of the study.

As with all freight initiatives, the challenge for the NHS freight connectors focuses on increasing their priority for transportation funding. The lack of a constituency to champion connector initiatives, combined with the lack of public understanding on the role these connectors play in the economic health of local communities and the country, as well as complex community and environmental situations surrounding these facilities, make successful intermodal development a challenging task.

IV. Critical Issues and Strategic Initiatives for Intermodal Connectors

Critical Issues

This chapter identifies key issue areas and options to improve the efficiency and operation of intermodal connectors, based on the analyses conducted as part of this study. They also build on recommendations in recent USDOT reports, specifically the Marine Transportation System (MTS) report submitted to Congress in 1999, and the DOT report "Impact of Changes in Ship Design on Ports and Inter-modal Facilities." This latter report was a product of a series of meetings held in 1998 with freight stakeholders on trends in maritime shipping and the likely impacts on ports and rail/highway intermodal linkages.

These issue areas and options presented in the chapter are also responsive to the comments expressed in the outreach sessions conducted by FHWA for this report, and outreach meetings with private sector freight interests, port and airport authorities, States, and MPOs. Finally, they build on to the FHWA field review of freight transportation, conducted by FHWA's Corporate Management Business Unit, which resulted in a February 2000 report "Implementing Improvements to Enhance Freight Transportation."

The NHS inter-modal freight connectors are unique in some ways; in others, they are microcosms of general freight mobility. Transport projects tend to be evaluated on the basis of their costs and benefits to the sponsoring jurisdiction, whether at the State or the local level. The environmental and social costs of both passenger and freight projects, including the connectors, tend to be borne locally. Project benefits, on the other hand, tend to be distributed differently. Benefits of passenger projects tend to remain within the sponsoring jurisdiction's boundaries, while the economic benefits of freight projects are widely distributed. Increasing the awareness of freight benefits and costs is an important role and contribution for the Federal Government, and should be undertaken more extensively through the development of economic analysis and network analysis tools to assist States and local governments.

Making the leap from improved understanding and planning to actual project development, however, will require financial support, since jurisdictions naturally tend to program projects that show the greatest direct benefits to their constituents. Systemic improvements for freight mobility, including the NHS connectors, will likely require innovative approaches and financing strategies to encourage consis tent programming of freight projects of widespread value to freight mobility. This is particularly true as transportation "needs" continue to outpace State and local abilities to deliver transport system improvements and services. The following identifies the broad issue areas identified in the analyses and outreach sessions:

Benefits: The problem of introducing freight projects may be compounded by the lack of adequate economic tools for rigorous and systemic evaluation, both of the freight connector projects and of the tradeoffs that must be assessed between freight connector and passenger-oriented projects. The goal of better understanding the benefits of NHS connector and other freight improvements to local communities, the region and the nation requires revisions to traditional planning procedures and the development of new tools to help States and MPOs better quantify these benefits.

Ownership: The analyses and outreach sessions clearly identified the "orphan" status of the inter-modal connectors – roadways that generally lacked attention, with the exception of a handful of significant high-profile projects such as the Alameda Corridor in California, the FAST Corridor in Washington and the Portway in New Jersey. As one public sector agency executive noted at the Tacoma, Washington outreach meeting, *"the NHS intermodal connectors are someone else's problem."* The assessment of existing conditions on the inter-modal connectors clearly demonstrated the lack of attention paid to these short-but-essential pieces of roadway.

Time Horizon: The question of ownership and responsibility is compounded by the time differences between public and private sector planning horizons. Public project planning and implementation, even for relatively small projects, will take a minimum of 5 to 10 years, depending on the complexity of the project. As a result, the private sector often loses interest in projects that seemingly take "forever" to be built. As one private sector representative commented, *"We know that we have to get engaged with the MPOs to get our projects. When I come to the meetings and ask when we can get some help, they tell me to come back in 7 years. That's not good enough. We can 't wait that long. That's why we have a hard time getting engaged with government agencies...we have a different time horizon and they have a hard time dealing with that."*

For extensive projects involving multiple jurisdictions, environmental evaluations, complex financing, and State/Federal project development oversight, the time horizon may be even lengthier. In addition, States and MPOs use multiyear programming of projects as a means of relating the planning process to project development. Typically, programs will be established 3 to 5 years out, with periodic updates to reprioritize projects as needed. Private sector decision making, in contrast, is accelerating to accommodate the demands of competitive international environments for quick response to market pressures. This means that public sector time frames for freight connector improvements are increasingly lagging private sector requirements for decision-making.

Institutional Impediments: Introducing new projects, especially freight projects, into the pipeline is a political challenge when legitimate transportation needs invariably exceed anticipated revenues. Several States and MPOs are actively involved in freight planning, including the establishment of freight advisory committees, but it is difficult to maintain a high level of visibility over time. Examination of a better means of institutionalizing freight concerns and addressing the conflicts between public and private sector decision making will be required to address NHS connector and other intermodal freight transportation concerns in a more consistent manner. The designation of the connectors as NHS has increased the awareness of intermodal connectors; however, it is important to ensure that the appropriate public sector agencies and private sector freight stakeholders are involved in planning capital improvements and ensuring efficient operations. Improving awareness of freight and coordination are fundamental to the furtherance of this goal.

Freight projects usually given priority are the high-profile major port, rail terminal, or airport terminal initiatives with the vast majority of connectors unnoticed in the planning process. High profile projects have been funded through the MPOs, States, and High Priority Projects under ISTEA and TEA-21. Approximately 20 percent of all federally funded freight transportation improvements have received funding under the Demonstration or High Priority Project programs.' These high profile projects (for example: Alameda Corridor in California, Point Mack Terminal in Maine, FAST Corridor in Washington State, New Jersey Portway, Cross Harbor Freight Study in New York City, etc.) have brought to the attention of public officials, the potential for economic growth in the area, State, and Nation as well as community, air quality, and congestion benefits. In contrast, most NHS intermodal freight connector improvements have not necessarily been understood, well defined, or caught the imagination of the decision makers, and as a result, have not been funded. This was evidenced in the field review, which showed a very large share of the reported investments were on only a handful of connector projects.

Optimal management of the interrnodal connectors can only be achieved when public, private, and multi-jurisdictional elements are coordinated. The need for coordination extends across project planning and development, into on-going operations and maintenance. The development and operation of intermodal connectors must be integrated into the planning of the freight facilities they serve (ports, airports, rail, and pipeline terminals). A coordinated approach will also promote consideration of alternative strategies for addressing connectivity (such as infrastructure improvements, use of information technologies and institutional arrangements).

9 "Funding and Institutional Options for Freight Infrastructure Improvements" (KPMG for FHWA Office of Freight Management and Operations, May 2000).

Charting a Course for Overcoming Impediments

FHWA should assess its role in facilitating the movement of freight with the cooperation and support of those that represent inter-modal perspectives on freight mobility requirements from both private and public transportation sectors. Also, given the variability in the data reported for the connectors in the inventory, a more comprehensive examination of deficiencies and investment options is desirable. This assessment should be made in consultation with industry organizations such as the American Association of State Highway and Transportation Officials, the Association of Metropolitan Planning Organizations, the Intermodal Association of North America, the American Association of Port Authorities, and other carrier and shipper interest groups to explore options to more effectively address issues of regional and national concern. This approach will be useful to all stakeholders in incorporating the needs of the freight community in the transport project development process. This comprehensive approach is consistent with other Departmental reviews of inter-modal issues, most recently the Marine Transportation System (MTS) report submitted to Congress in 1999, which cited the need for examination of NHS connectors, and the DOT report "Impact of Changes in Ship Design on Ports and Intermodal Facilities."

This assessment should include an examination of planning procedures and economic analysis tools and other research and development needs. Program initiatives available under existing surface transportation authorization, or possible future initiatives, to promote freight mobility and NHS connector improvements, should also be considered.

The following section identifies several analysis options under each issue area. They are not a definitive list of analysis options. They do respond to general concerns raised in the field survey and in outreach meetings as the appropriate areas of consideration to enhance NHS connector focus within the statewide and metropolitan planning and programming processes. They are included for illustrative purposes only and as a point of departure for further discussion and examination. They are not policy recommendations. Strategic options for further analysis are presented for the following four issue areas:

- Awareness and coordination;
- Information technologies;
- Funding; and
- Community and environmental responsiveness

Awareness and Coordination

Clearly the biggest problem in implementing intermodal connectors projects is the lack of priority accorded to freight movements in the planning and programming process.

This is primarily due to the fact that freight projects must compete with "high priority" passenger projects, and with limited funding available. The result is very little is invested in freight transportation improvements. Possible actions to consider in raising the visibility and priority of freight projects in State and MPO planning and programming processes are:

Intermodal Connector Planning and Coordination Incentives: As an incentive to freight project development, additional funding for planning and coordination could be used to financially support States and MPOs who are identifying, conceptualizing and planning for freight projects. Building on the comments received during the outreach meetings, such grants would be awarded to areas and agencies that have demonstrated a commitment to coordination and meaningful private sector involvement. These incentives might consider a planning agency's progress in facilitating on-going private sector freight participation, coordinating project development among public agencies, and development of a freight project implementation plan. Evaluation criteria would need to be developed to encourage adoption of best practices in freight planning throughout the State and local planning communities.

Identification of an Intermodal Network: Many public planning agencies are not fully aware of the importance of freight to the economy of their region and to the Nation as a whole. Participants in outreach meetings highlighted the need to think of the intermodal connectors within the context of the full freight system. One possible means of raising the visibility of freight might be the identification of an interrnodal freight network.

The National Truck Network (NTN) was designated in the early 1980s. The NTN is primarily Interstate, principal arterial and other defined major truck routes. This network is limited in some States and does not extend to some of the largest generators of heavy truck traffic. A National Truck and Intermodal Network would be an extension of NTN to major ports, airports, rail yards, and pipeline terminals that generate high volumes of intermodal freight by truck. It is envisioned that the highway component, including intermodal connectors, of this freight network would be a subset of the NHS. Designation of the intermodal connectors to a national freight network would assure the consideration of trucks in the design of any improvements on the network.

Multi-jurisdictional Approaches and Partnerships: Several multi-state pooled-fund initiatives to evaluate the regional importance of freight corridors and other key transport facilities are underway or have been completed by States. However, States participating in pooled fund initiatives may not always agree on the regional prioritization of improvements because of their own State needs. There is strong evidence that regional approaches do increase the degree of understanding of the relative significance of freight corridors within a regional context. Routes and facilities of critical significance to freight can be identified, but the methods used in

identification can either reinforce or undermine the legitimacy of the effort. A true partnership demands consultation between the various units of government in determining regional and national priorities. This is the first step to a more fully coordinated program of regional improvements and the fact that these initiatives result in self-selected routes of significance rather than top down designation of critical routes is critical to support at the State and local levels.

Consideration of intermodal connectors in any federally funded port, aviation or roadway study or project: The efficient operation of the inter-modal facility is contingent upon the efficient operation of the inter-modal connectors. Accordingly, federally funded studies or capital projects on federally funded intermodal terminals should include an evaluation of the adequacy of the highway connectors to identify needed infrastructure and operations improvements. Such an assessment would encourage a closer linkage between transportation planning, land use planning, zoning, and site development.

Information Technologies

An area not addressed in the inventory, because of its invisibility, is the use of information technologies. Industry trends clearly indicate the need for information utilization as well as seamless physical movements. Integrated information technologies use offers the opportunity to optimize the physical capacity of the inter-modal connectors, facilitating efficient freight flows. Currently, an array of information systems can be used to facilitate freight movement. In many cases, systems developed to expedite the movement of freight do not extend to the intermodal connectors or the terminals they serve and/or are not interoperable across the various segments of the intermodal system.

Information technologies can be used to make more efficient use of the capacity of connectors by allowing drivers to be informed of gate queues, railroad crossing closings, road conditions and delays, best route information and the availability of loads. In addition, compatibility between information systems must be addressed. The Federal government should continue to encourage strategies that integrate the use of information technologies into the operation of the inter-modal connectors and other major freight routes as well. In this manner, the Federal government can ensure that both the information and physical requirements for intermodal connectivity are addressed.

Funding

Inadequate funding was identified in the outreach meetings as the most critical problem constraining improvements on the NHS connectors. The needs and capital requirements of the inter-modal connectors vary extensively throughout the country. Some projects are minor, involving spot improvements, signing, and traffic control devices; others are significantly greater in size and required investment. Another problem area identified in the inventory and analysis was the inability of some States to spend funds off the State system as well as lack of local match, often required by the State.

The Transportation Equity Act for the 21st Century (TEA-21) included the Transportation Infrastructure Finance and Innovation Act (TIFIA), a program that provides Federal credit assistance (e.g., direct loans, loan guarantees, and lines of credit) to large-scale transportation projects of national significance. However, each project must meet certain criteria to qualify. It must cost at least $100 million or 50% of a State's annual apportionment of Federal-aid funds, whichever is less, and must be supported in whole or in part from user charges or other non-Federal dedicated funding sources. These criteria would eliminate most of the types of projects proposed on intermodal connectors.

It is suggested that a full range of financing mechanisms be investigated over the next two years prior to reauthorization. These include: 1) a new Federal credit program, similar to TIFIA, targeted at smaller inter-r-nodal connector projects; 2) expand the eligibility of the Railroad Rehabilitation and Improvement Financing credit program to include inter-modal connector projects; 3) expand or strengthen the State Infrastructure Banks program, to allow for the capitalization of an inter-modal freight connectors account with Federal-aid; 4) encourage the creation of State level credit programs or infrastructure funds for intermodal freight connector projects; 5) connector incentive grants to overcome some of the problems encountered by the States and local areas in funding freight improvements; 6) reducing the match required for Federal funds where connectors under local ownership do not have the resources; and 7) a set-aside of NHS funds for intermodal connector projects.

State and local agency input for any proposed initiative will be sought through ongoing forums, conferences, etc. A National Freight Roundtable representing private freight interests could also provide valuable dialogue on any possible initiatives. However, it is also recognized that these are mechanisms that are subject to congressional action and will be looked at during the reauthorization of the highway program at the end of TEA-21.

Community and Environmental Responsiveness

An evaluation of environmental considerations related to freight projects found that such projects encounter nearly every type of issue. As freight traffic continues to consolidate (i.e., rail mergers, big ships, etc.) into fewer major hubs, the amount of traffic on, and the importance of efficient inter-modal connectors will grow. The development and operation of connectors cannot be done in a vacuum. Existing and potential environmental concerns must be recognized and addressed early in the planning process. The development and operation of intermodal connectors are subject to environmental considerations such as wetlands, endangered species and habitats, historical structures, air quality, noise, Community cohesion, and environmental justice.

Because of their role in serving heavy truck movements through the freight system, inter-modal connectors generate more "host community" issues than many other transportation projects. Host community issues arise where communities adjacent or proximate to where the inter-modal freight terminals and connectors are physically located have the perception that the benefits generated by such facilities and any associated improvement projects go to areas beyond their own. The host community believes they are exposed to the negative impacts generated by the truck traffic while other areas receive the benefits of improved freight service. In many cases, these perceptions are valid ones since they have to deal with a disproportionate share of the negative impacts (e.g., air quality, community disruption, noise, traffic, and safety issues). This can easily become the focus of host community concerns, especially on local roads. In order to deliver necessary transportation improvements while protecting communities, early consideration of these issues is critical.

Environmental protection and community considerations must be integrated into the development and operation of intermodal connectors. Suggested considerations to be examined in planning and project development for intermodal connectors include: 1) exploring mechanisms for leveraging the transportation investment into local economic development opportunities; 2) taking into account the concerns of surrounding communities regarding such issues as truck traffic, air quality and noise; 3) identifying creative strategies to meet local, State and Federal environmental requirements; 4) ensuring appropriate planning and training to enable quick response to environmental incidents; and 5) identifying funding for host communities to explore avenues to reduce the localized impacts faced by the communities surrounding major regional freight terminals and advance the state-of-the-art for successfully integrating freight movement into the nation's landscape and communities. These actions will promote inter-modal projects as a "good neighbor" to communities and other land uses.

APPENDICES

Appendix A

NHS Intermodal Connector Selection Criteria

Proposed modifications consisting of connections to major inter-modal facilities should be developed using the criteria set forth below. These criteria were used for identifying initial NHS inter-modal connections to major intermodal terminals. The primary criteria are based on annual passenger volumes, annual freight volumes, or daily vehicular traffic on one or more principal routes that serve the inter-modal facility. The secondary criteria include factors that underscore the importance of an inter-modal facility within a specific State.

PRIMARY CRITERIA

Commercial Aviation Airports

1. Passengers — scheduled commercial service with more than 250,000 annual enplanements.

2. Cargo — 100 trucks per day in each direction on the principal connecting route, or 100,000 tons per year arriving or departing by highway mode.

Ports

1. Terminals that handle more than 50,000 TEUs (a volumetric measure of containerized cargo which stands for twenty-foot equivalent units) per year, or other units measured that would convert to more than 100 trucks per day in each direction. (Trucks are defined as large single-unit trucks or combination vehicles handling freight.)

2. Bulk commodity terminals that handle more than 500,000 tons per year by highway or 100 trucks per day in each direction on the principal connecting route. (If no individual terminal handles this amount of freight, but a cluster of terminals in close proximity to each other does, then the cluster of terminals could be considered in meeting the criteria. In such cases, the connecting route might terminate at a point where the traffic to several terminals begins to separate.)

3. Passenger terminals that handle more than 250,000 passengers per year or 1,000 passengers per day for at least 90 days during the year.

Truck/Rail

50,000 TEUs/year, or 100 trucks per day, in each direction on the principal connecting route, or other units measured that would convert to more than 100 trucks per day in each direction. (Trucks are defined as large single-unit trucks or combination vehicles carrying freight.)

Pipelines

100 trucks/day in each direction on the principal connecting route

Amtrak

100,000 passengers/year (entrainments and detrainments) Joint Amtrak, intercity bus and public transit terminals should be considered based on the combined passenger volumes. Likewise, two or more separate facilities in close proximity should be considered based on combined passenger volumes.

Intercity Bus

100,000 passengers/year (boar-dings and deboardings)

Public Transit

1. Stations with park and ride lots with more than 500 vehicle parking spaces: or

2. 5,000 daily bus or rail passengers with significant highway access (i.e., a high percentage of the passengers arrive by cars and buses using a route that connects to an NHS route); or

3. A major hub terminal that provides for the transfer of passengers between several bus routes. These stations should have a significant number of buses using a connector route to the NHS.

Ferries

Interstate/international — 1000 passengers/day for at least 90 days (usually summer) during the year - A ferry connecting two terminals within the same metropolitan area is considered local transit, not interstate.

SECONDARY CRITERIA

Any of the following criteria could be used to justify NHS connections to inter-modal terminals where there is a significant highway interface:

1. Inter-modal terminals that handle more than 20 percent of passenger or freight volumes by mode within a State;
2. Inter-modal terminals identified either in the Interrnodal Management System or the State and metropolitan transportation plans as a major facility;
3. Significant investment in, or expansion of, an inter-modal terminal; or
4. Connecting routes targeted by the State, MPO, or others for investment to address an existing, or anticipated, deficiency as a result of increased traffic.

Proximate Connections

Intermodal terminals, identified under the secondary criteria noted above, may not have sufficient highway traffic volumes to justify an NHS connection on any single route to the terminal. States and MPOs should fully consider whether a direct connection should be identified for such terminals, or whether being in the proximity (2 to 3 miles) of a NHS route is sufficient.

Appendix B

NHS Connector Condition and Investment Inventory Form

General Guidance

The purpose of the NHS Connector Condition and Investment Study is to characterize the nature and extent of physical and operational problems on freight connectors and investments made on them. Results for specific connectors or States will not be disseminated. While the study is focused on the recently approved NHS connectors, those connector-like facilities previously approved in the initial NHS system designation should be included as regular connectors. Since these routes are not listed as connectors in our files, the Division and State DOT will have to identify them and include them in the inventory. A State may also want to include intermodal facilities (i.e., terminals previously identified with 0.0 mileage) that "front" (i.e., have no connector) on mainline NHS routes. In these instances, a reasonable length of route (up to 2 miles or to a higher functionally classified facility) should be inventoried (Items C5. through D3. of the inventory from).

It is believed that much of the information can be obtained from existing data sources maintained within the State DOTs, MPOs and possibly local jurisdictions. However, there may be on-site visits needed to supplement available sources. If on-site visits are needed, a team approach involving the Division, State DOT, MPOs, local jurisdictions and terminal operators is recommended. Much of this information can be obtained by a "windshield" survey.

In many cases, States with Intermodal Management Systems (IMS) can provide most of the information requested on the inventory form. Therefore, the IMS should be a rich source of information. The terminal operators should also be an excellent source of information. They may be able to provide information on nonrecurring and traffic operational problems such as congestion and delays and when they occur; safety problems and high accident locations; railroad crossing delays; clearance and weight restrictions; and other observations on problems or impediments affecting the operation and service to the terminal facility.

While the States are now beginning to report Highway Performance Monitoring System (HPMS) Universe Data for recently designated NHS connectors, they have not achieved full reporting at this time. Even with full reporting, HPMS would not provide answers for the range of questions about the conditions on connectors, related improvements and impediments that are the primary focus of the study.

The information on investments is critical to the study but we recognize the potential difficulties associated with getting complete data, especially where local and private

sector funding is involved. TIPs and STIPs should be an excellent source of information. To obtain information on funding from local agencies or private sources, discussions with terminal operators may be necessary. In these discussions of investments, information can be obtained on any perceived impediments to investments on connectors.

Data Checklist Item Requirement Instructions

Header Identification — The facility information, at the beginning of the form, will be supplied by headquarters from the NHS freight connector database file. The facility ID number to be entered in the header is derived from this data. It consists of a two character State code, a terminal ID number, and a one-character terminal type code (A-airport, L-truck/pipeline, P-port, and R-truck/rail). If a terminal has more than one connector, there will be a single numeric code which will uniquely identifies each connector (e.g., 1, 2, 3...).

Part I - HPMS Universe Data

HPMS Universe Data — The items requested from the HPMS data records are: rural/urban (9), functional system (12), governmental ownership (20), AADT (28), through lanes (30), urban location or character of land use (3 1), and pavement condition rating (PSR, PCR, or IRI) (36). The descriptors for theses items and coding instructions are contained in the HPMS Field Manual. Because of the importance of pavement condition, it should be verified in all site visits and reported in Part II of the form.

The State should have already submitted the 1997 HPMS data. There may be some difficulty in matching the HPMS data to the connector to be inventoried, however, there is a 100 character identification field for each section record which may provide street names to assist in matching the connector and the HPMS sections. State, county, and urbanized area code will also be useful in identifying the HPMS section location. Section length and type of terminal facility (2 Airport, 3 Port, 5 Rail/Truck, 8 Pipeline) are also in the HPMS universe record. It is likely that multiple HPMS sections will make up the full length of a connector.

Bridge/Structure Numbers -Matching Bridge Inventory Structure data with connectors cannot be accomplished without the bridge/structure number. Please enter the bridge/structure number for each structure and if it is on or over the connector. The numbers may be available on the structure or it may be necessary to obtain the information from the State.

Railroad Crossing Numbers -Matching railroad-crossing records with NHS connectors also requires the crossing number. Please enter the 6-digit, 1 -letter "U.S DOT/AAR National Rail-Highway Crossing Inventory Number" for each active at-grade crossing on the connector. All crossings should have the number posted at the crossing.

Part II - Connector Condition Information

A. Geometric and Physical Features

A1. **Pavement Condition —** The HPMS data may have PSR data, however, it should be verified on any site visit. If IRI is reported in HPMS, a conversion to PSR is requested. The important consideration here is speed reduction caused by poor pavement condition. This can best be observed by a field visit and riding over the facility. If pavement condition is not uniform and changes significantly over the length of the connector, please report the estimated percentages in each category.

A2. Check items that are a problem.

a. **Inadequate Travelway Width** (width available for trucks) — On some of the lower functional systems, the connectors won't be striped so it may operate as a single lane of more than 12 feet. If roadway width is not adequate for two-way truck traffic, it would be considered inadequate.

b. **Inadequate Shoulder Width —** There should be sufficient width to accommodate a parked truck without hindering traffic flow.

c. **Lack of Stabilized Shoulders —** If the shoulder is not paved, it should be able to support heavy trucks.

d. **Tight Turning Radii at Intersections —** Where right turning trucks are required to make wide turns into adjacent lanes. Immountable curbs and other obstructions at the corner make the problem more severe.

e. **Road Not Paved —** Self explanatory.

f. **Bridge/Overpass Vertical Clearances —** For connectors where bridges or tunnels are posted (usually less than 14 feet for other than Interstate).

g. **Weight Limitations Road/Bridge —** Posted less than normal legal loads (i.e. less than what is permitted for this type of road).

h. **Narrow Bridge/Tunnel —** Is width inadequate to safely accommodate two-way truck traffic.

i. **Rough Abandoned Railroad Crossing —** Report for rough crossing surfaces, especially where there is significant reductions in speed.

j. **Drainage/Flooding —** Where standing water periodically impedes traffic.

B. At-Grade Railroad Crossings

B1. Report the **number of active crossing locations.** A single location may have more than one set of tracks at a single location or crossing treatment. The survey form has three columns for up to 3 separate crossings. If additional columns are needed they can be added manually.

B3. Railroad Crossing Problems

a. **Delays at Railroad Crossing —** Where delays are considered a problem, delaying traffic for excessive periods.

b. **Switching/Make-up Operations —** Where on-terminal train facilities are too short to handle train make-up, requiring trains to back out on the connector and block traffic.

c. **Crossing Warning Devices —** Where crossing warning devices are substandard or active warning devices are warranted.

d. **Inadequate Sight Distance at Crossing —** Where lateral obstructions block a drivers view of oncoming trains, especially those crossings without active warning devices.

e. **Rough Railroad Crossing Surface —** Where roughness or profile cause a significant reduction in speed to crossing vehicles.

f. **Vehicle Under-clearance** (Humped Crossing) — Where there is a possibility of a low-bed truck getting hung-up at the crossing.

g. **Lack of Alternative Route —** For connectors with extended delays that essentially block access to the facility.

C. Traffic Operations and Safety

c2. Check reasons for delay and when they **occur <u>on the connector</u>.** AM/PM peak is the commuter peak (morning and afternoon rush hours when workers are going to and from work). Peak hour of the terminal is when the terminal is busiest. It may occur in the AM peak when trucks arrive or it may be mid-morning where trucks avoid the AM peak. It may also occur at other times when a train or ship is unloading/loading. Both may apply.

a/b. **Heavy Traffic/Congested —** Where traffic volumes exceed the capacity of the connector, at some location along the route, probably during peak periods.

c/d. **Long Delays at Traffic Signals** — Where the intersection fails to clear on a cycle.

e/f. **Difficulty Making Left or Right Turns** — Back-ups due to heavy turning volumes.

g/h. **Lack of Turning Lanes at Intersection** -Additional turn lanes are necessary to handle traffic at one or more intersections.

i/j. **Lack of Traffic Signals** -Because of truck operating characteristics, signals may be warranted at high volume intersections.

k/l. **Truck Queues at Gates** — This could occur before terminal gates are open during peak periods. It may cause back-ups on the connector if the ques occupy travel lanes. It may also occur from other truck terminals along the connector (i.e. not the intermodal terminal).

m/n. **Frequent Accidents** — A higher than average accident history would indicate a safety problem.

o/p. On-Street Parking Conflicts — Where vehicles maneuvering in and out of on-street parking create either a safety problem or delay traffic. Illegal parking by trucks or other vehicles may also be a problem.

q/r. **Moveable Span Bridges** — Bridge openings that affect terminals during operations.

C6. Delays at the **connector/mainline NHS iunction.**

ah. **Heavy Traffic on Mainline NHS** -Where it is difficult for trucks to merge on to the NHS .

c/d. **Lack of Merge Area on to Mainline** — Could occur where trucks enter a higher-speed facility.

e/f. **Lack of Traffic Signals** — Where an uncontrolled or stop controlled intersection is congested. For example, because of truck operating characteristics, the number of acceptable gaps for trucks crossing or entering a heavily traveled facility may be a problem.

g/h. **Poorly Designed Ramps** — Do not adequately handle larger trucks or cause indirect routing.

i/j. **Tight Turning Radii at Intersection** — This could cause back-ups at intersections where trucks have to wait for breaks in traffic to make wide turns.

Ml. **Lack of Turning Lanes** -Additional turn lanes are necessary to handle traffic.

D. Other Factors

D1. **Lack of truck route signs** — Drivers unfamiliar with the location of the terminal getting lost.

D2. Any other problems that would not fit in any of the above categories.

Part III - Investment Information

E/F. Past and Programmed Investments

E1. Information on **improvements made since the connector was designated** may be available from TIP/STIP program documents. For improvements on local roads, it may be necessary to contact the local jurisdiction or the terminal operator.

F1. **Programmed improvements for the next 3 to 5 years** are identified on approved STIPS or TIPS. For some improvements, it may be difficult to identify the time period exactly so judgement should be used.

E/F2. These are the standard improvement categories. Use the left column for improvements made since 1995. Use the right column for programmed improvements.

E/F3. Report past spending on left and programmed funds on right.

G. Other Improvement Information

G1. Report **any improvements beyond those reported as programmed** above that are planned and expected to be built in the next 3 to 5 years.

G2. These are **non-highway improvements** such as building on-dock rail or non-connector highway improvements such as improvements to the mainline NHS that reduce the congestion getting to the connector.

Facility ID_____

INTERMODAL CONNECTORS CONDITION & INVESTMENT STUDY FIELD INVENTORY DATA CHECKLIST

Terminal Name:
City: Connector Length:
Connector(s) Description:

PART I
HPMS Universe Data From HPMS National Database

Item 9. Rural/Urban Designation ___

1 Rural
2 Small Urban (5 to 49k)
3 Urbanized (50 to 200k)
4 Urbanized (>200k)

Item 12. Functional System Code ___, ___, ___ (If more than one, list all that apply)

RURAL	URBAN
01 Principal Arterial	11 Principal Arterial - Interstate
02 Principal Arterial - Other	12 Principal Arterial -Freeway/Expressway
06 Minor Arterial	14 Principal Arterial - Other
07 Major Collector	16 Minor Arterial
08 Minor Collector	17 Collector
09 Local	19 Local

Item 20. Governmental Ownership ___, _____ (If more than one, list all that apply)

01 State Highway
02 County Highway
03 Town or Township Highway
04 Municipal Highway
21 Other State Agency
25 Other Local Agency
26 Private (open to public)
31 State Toll Authority
32 Local Toll Authority

Item 28. AADT (if available) _____

Item 30. Number of Through Lanes ___

Item 31. Urban Location ___, _____ (If more than one, check all that apply)

1 Central Business District
2 High Density Business/Commercial Center
3 Low Density Commercial
3a Industrial, Manufacturing and Warehousing (not in HPMS)
4 High Density Residential
5 Low Density Residential
7 Other

Item 36. Pavement condition rating (PSR) ____ (o-5.0) (Reported in HPMS data)

Facility ID_____

Planning Jurisdiction

Name of the planning agency with area wide planning responsibility over the connector.

MPO_____ or State_____

(This information will be used to match with Part IV information.)

Bridge/Structure Identification

Please report bridge/structure ID's (up to 15 digits) and whether **on** or **over** connector.

ID #_____ On____ Over____

ID #_____ On____ Over____

ID #_____ o n____ Over____

ID #_____ On____ Over____

l D #_____ On____ Over____

ID #_____ On____ Over

I D #_____ On____ Over____

ID #_____ On____ Over____

Railroad Crossing Numbers

Please report the 6-digit, 1 -letter "U.S. DOT/AAR National Rail-Highway Crossing Inventory Number" for all active crossings on the connector. It will be posted at the crossing.

1. ID #_____ **2 .** ID #_____

3. ID #_____ **4** . ID #_____

5. ID #_____ **6 . I D #**_____

Facility ID_____

INTERMODAL CONNECTORS CONDITION & INVESTMENT STUDY
FIELD INVENTORY DATA CHECKLIST

Terminal Name:
City: Connector Length:
Connector(s) Description:

PART II
Connector Condition Information

A. Geometric and Physical Features

A1. What is the condition of the pavement on the connector? (i.e. observed on field inspection.)

5. Very good	4. Good	3. Fair	2. Poor	1. Very poor

If the condition is not uniform over the entire connector length, please indicate the percentage of roadway in each category:

5 _____% 4 ____% 3____ % __2__ % ____1%

Use the following guide in answering question Al :

Very good	Newly built or resurfaced and distress free.
Good	Smooth Surface with little to no cracking or rutting.
Fair	Serviceable with shallow rutting and moderate cracks beginning to occur, but does not affect travel speed on the connector.
Poor	Same problems as fair but worse, causing some reduction in speed.
Very poor	Major problems with potholes etc., causing substantial reductions in speed.

Facility ID_____

A2. Which of the following geometric or physical features is a problem on the connector? Check all that apply.

	Geometric/Physical Problem	**Short Section**	**Most of Length**
a.	Inadequate Travel way Width		
b.	Inadequate Shoulder Width		
c.	Lack of Stabilized Shoulders		
d.	Tight Turning Radii at Intersections		
e.	Road Not Paved		
f.	Bridge/Overpass Vertical Clearance		
g.	Weight Limitation Road/Bridge		
h.	Narrow Bridge/Tunnel		
i.	Rough Abandoned Railroad Crossing		
j.	Drainage/Flooding		
k.	Other_____		

A3. If any of the factors checked or "other" in question A2 need explanation, please provide it here (continue on back of page if necessary):

B. At-Grade Railroad Crossings

B1. How many at-grade railroad crossings are there along the connector? ____ (If 0 go to Cl)

B2. Are at-grade railroad crossings a problem?

Yes
No (if No, go to Cl)

B3. Why are railroad crossings a problem? Check all that apply for each set of tracks.

	Crossing Problem	#1	#2	#3
a.	Delays at Railroad Crossing			
b.	Switching/Make-up Operations			
c.	Crossing Warning Devices			
d.	Inadequate Sight Distance at Crossing			
e.	Rough Railroad Crossing Surface			
f.	Vehicle Under Clearance (Humped Crossing)			
g.	Lack of Alternate Route			
h.	Other_____			

B4. If any of the factors checked in question B3 need explanation, please provide it here (continue on other side of page if necessary):

C. Traffic Operations and Safety

C1. Are there safety problems or delays on **the connector** (excluding delays associated with railroad crossings)?

Y e s
___No (if No, go to C4)

C2. Why and when does delay occur on **the connector?** Check all that apply.

Traffic Operations/Safety Problem	AM/PM Peak		Terminal Peak	
Heavy Traffic/Congested	a.		b.	
Long Delays at Traffic Signals	c.		d.	
Difficulty Making Left or Right Turns	e.		f.	
Lack of Turning Lanes at Intersections	g.		h.	
Lack of Traffic Signals	i.		j.	
Truck Queues at Gates	k.		l.	
Frequent Accidents	m.		n.	
On-Street Parking Conflicts	o.		p.	
Moveable Span Bridge Openings	q.		r.	
Other_____				

c3. Does the terminal peak occur during the AM/PM peak? Yes-, No___.

c4. If any of the factors checked in question C2 need explanation, please provide it here (continue on other side of page if necessary):

_____
_____
_____
_____

C5. Is delay a problem at the connector's junction with the mainline NHS route?

Yes No (if No, go to D1)

C6. Why and when does delay occur at the connector/NHS junction? Check all that apply.

At the Connector Intersection	AM/PM Peak		Terminal Peak	
Heavy Traffic on Mainline NHS	a.		b.	
Lack of Merge Area on to Mainline	c.		d.	
Lack of Traffic Signals	e.		f.	
Poorly Designed Ramps	g.		h.	
Tight Turning Radii at Intersections	i.		j.	
Lack of Turning Lanes	k.		l.	
Other_____	m.		n.	

c7. If any of the factors checked in question C6 need explanation, please explain:

_____

_____

D. Other Factors

D1. Is destination signing adequate for truck drivers to find the freight terminal? Yes___, No___, Comment?

_____

_____

D2. If there are any other relevant factors not on this checklist which affect the efficiency, operation, and safety of this connector, please describe them here:

_____

_____

D3. Re-contact information. Whom can we call at the FHWA Division Office to clarify any of the information on this form?

Name: _____ Phone: _____

Organization: _____

Facility ID_____

INTERMODAL CONNECTORS CONDITION & INVESTMENT STUDY
FIELD INVENTORY DATA CHECKLIST

PART III
Investment Information

E. Past Investment on Connectors

E1. Have any improvements been made to the connector since November 1995?

No (if No, go to F1)

Yes (check column below)

E2. What types of improvements have been made? Check all that apply.

F. Programmed Investment

F1. Are any improvements programmed for the connector in the next 3 years?

No (if No, go to G1)

Yes (check column below)

F2. What types of improvements are programmed? Check all that apply

a.		New construction	a.	
b.		Reconstruction	b.	
c.		Widening	c.	
d.		Pavement Overlay	d.	
e.		Bridge Rehab/Construction	e.	
f.		Intersection Improvements	f.	
g.		Signage or Traffic Engineering	g.	
h.		Railroad Crossing Improvements	h.	
i.		Railroad Grade Separation	i.	
j.		Other_____	k.	

E3. What is the amount expended on improvements to the connector since November 1995?

F3. What is the estimated amount for programmed improvements for connector in next 3 years?

a.	$	Federal	a.	$
b.	$	State	b.	$
c.	$	Local	c.	$
d.	$	Private	d.	$
e.	$	Other_____	e.	$
	$	**Total**		$

G. Other Improvement Information

G1. Are any improvements planned beyond three years? No (if No, go to G2)

-Yes, Please Explain:

_____

_____

_____

G2 Have there been any improvements not on the connector that have benefited terminal traffic or operations? No (If No, go to G3)

Yes, Please Explain:

_____

_____

_____

G3. Re-contact information. Whom can we call to clarify the investment information on this form?

Name: _____ Phone: _____

Organization: _____

Facility ID_____

INTERMODAL CONNECTORS CONDITION & INVESTMENT STUDY FIELD INVENTORY DATA CHECKLIST

Part IV
Investment Processes

H. Improvement Identification (Note: This form is to be completed only once for each governmental agency having connectors within its planning jurisdiction.)

H1. What unit of government has responsibility for areawide planning?

Name of MPO_____ or State DOT _____

H2. Is there a systematic process in place for identifying freight needs in the area in which the connector is located? No (if No, go to H7)

Yes, Please explain: _____

_____

H3. What mechanisms have been used, by the unit of government in H1, to identify freight needs? Check all that apply.

a.	Policy Board	
b.	Technical Advisory Committee	
c.	Freight Advisory Committee	
d.	State Freight Committee	
e.	Chamber of Commerce	
f.	Management System(s)	
g.	Other_____	

H4. If any of the factors checked in question H3 need explanation, please provide it here (continue on other side of page if necessary):

_____

_____

H5. Have these mechanisms been responsible for getting projects programmed on NHS connectors? No, (if No, go to H6)

Yes, Please explain: _____

_____

H6. Have these mechanisms been responsible for getting other freight-related projects funded on other non-connector roads in the area?

No, (if No, go to H7)
Yes, Please explain: _____

_____

H7. Have any identified (i.e., applied for) improvements to connectors gone unprogrammed in this area since 1991? No (if No, go to H9)

-Yes, Please explain: _____

_____

H8. What factors contributed to the needed improvements going unprogrammed? Check all that apply.

a.	Low Priority in State/MPO Plans	
b.	Environmental Concerns	
c.	Neighborhood/Community Opposition	
d.	Physical/other Constraints	
e.	Lack of Local Match/Sponsorship	
f.	Lack of Private Sector Participation	
g.	Other_____	

H9. If any of the factors checked in question H8 need explanation, please provide it here (continue on other side of page if necessary):

_____

_____

H10. Are there any other relevant factors not listed which affect the ability to fund improvements on connectors?

_____

_____

H11. Re-contact information. Whom can we call to clarify the investment information on this form?

Name: _____ Phone: _____

Organization: _____

Appendix C
NHS Intermodal Freight Connectors

Alabama	Facility Type
BIRMINGHAM INTERNATIONAL AIRPORT Airport Highway to I-59/20	Airport
BURLINGTON NORTHERN RR DIXIE HUB CENTER Finley Blvd. to I-65 and U.S. 78 West	Truck/Rail
HUNTSVILLE INTERNATIONAL INTERMODAL CENTER Wall-Triana Highway from I-565 to the Port Facility	Port
ALABAMA STATE DOCKS (FREIGHT DOCKS) Beauregard St and The Robert Hope Bridge from the Facility to Water St and I-165	Port
ALABAMA STATE DOCKS (CSX AND BN RAIL/TRUCK) Beauregard St and The Robert Hope Bridge from the Facility to Water St and I-165	Truck/Rail
BROOKLEY INDUSTRIAL COMPLEX Michigan Ave (Ave I to I-10)	Truck&ail
PORT BIRMINGHAM - NORTH TERMINAL AL 269 (Port to I-20)	Port
PORT BIRMINGHAM - CENTRAL TERMINAL AL 269 (Port to I-20)... Mileage included with North Terminal Complex	Port
PORT BIRMINGHAM - SOUTH TERMINAL AL 269 (Port to I-20)... Mileage included with North Terminal Complex	Port
COLONIAL PIPELINE Facility to 28th St. to Balsam Ave. to Nabors Rd. to Ishkooda Rd. to Spaulding-Ishkooda Rd. to I-65	Truck/Pipeline
ERNEST NORRIS RR YARDS Entrance on Norfolk Southern Dr. to Ruffner Rd, to 16th St. to US 78 to Kilgore **Mem.** Dr. to I-20	Truck/Rail

Alaska	Facility Type
PORT OF ANCHORAGE Ocean Dock Rd. to E. 5th/6th Ave. to Seward Hwy	Port
ANCHORAGE INTERNATIONAL AIRPORT International Airport Road	Airport
FAIRBANKS INTERNATIONAL AIRPORT Airport Way	Airport
KETCHIKAN PORT Tongass Ave	Port
PORT OF JUNEAU Thane Rd (Mount Roberts Dr to Egan Dr.)	Port
SITKA AIRPORT Halibut Point Rd.	Airport
PORT OF NENANA Nenana Port Access Rd to Front St. to Nenana St.	Port
PORT OF VALDEZ Served by an Existing NHS Route	Port
PORT NIKISKI - KENAI Kenai Spur	Port
PORT OF SKAGWAY Served by an Existing NHS Route	Port

Arizona	Facility Type
PHOENIX SKY HARBOR INTERNATIONAL AIRPORT Sky Harbor Blvd between I- 10 and SR 153	Airport
TUCSON INTERNATIONAL AIRPORT Tucson Blvd (Valencia Rd to Airport Circle), Airport Circle (Tucson Blvd to Tucson Blvd) Country Club Rd (Valencia to Los Reales), Los Reales Rd (Country Club to Airport Cir)	Airport
GLENDALE INTERMODAL AND AUTO YARD 5 1st Ave (Grand Ave to I-10)	Truck/Rail
PHOENIX INTERMODAL AND AUTO YARD 7th St (I-10 to I-17)	Truck/Rail

Arkansas	Facility Type
FORT SMITH REGIONAL AIRPORT From I-540 to Phoenix Rd. to Airport Blvd to terminal	Airport
UNION PACIFIC RAIL/TRUCK RAMP From I-40 (ex 157) to SH161 to Bethany Rd	Truck/Rail
LITTLE ROCK NATIONAL AIRPORT Bankhead Dr (I-440 to Airport Dr), Airport Dr (Bankhead to Temple), Temple St (Airport Dr to	Airport
LITTLE ROCK PORT COMPLEX Fourche Dam Pike (I-440 to Lindsey), 0.9 mi on Lindsey Rd	Port
UNION PACIFIC EBONY TERMINAL, W MEMPHIS SH 118 (I-40 to Red Cross), Red Cross Rd (SH 118 to Kuhn), Kuhn Rd (Red Cross to Terminal)	Truck/Rail
ST. LOUIS SOUTHWESTERN RAILROAD COMPLEX 2nd St (US 65 to Port Rd), Port Rd (2nd to Emmett Sanders), Emmett Sanders (Port to Port of Pine Bluff Complex)	Truck/Rail
CENTRAL AR PIPELINE/FUEL STORAGE COMPLEX From I-440 (ex 10) to US 70 to Central Airport Road	Truck/Pipeline
LION OIL PIPELINE/REFINERY/FUEL STORAGE Robert E Lee St [formerly SH 335](US 82 to Hinson), Hinson Rd (Robert Lee to Terminal)	Truck/Pipeline
PORT OF PINE BLUFF 2nd St (US 65 to Port Rd), Port Rd (2nd to Emmett Sanders), Emmett Sanders (Port to Port of Pine Bluff Complex)	Port
TRUMAN ARNOLD FUEL STORAGE COMPLEX Club Rd (I-40 to SH 38), SH 38 (Club to S Loop), South Loop Rd (SH 38 to 8th), 8th St (S Loop to Terminal)	Truck/Pipeline
PORT OF VAN BUREN COMPLEX SH 59 (Port Access Rd to I-540)	Port
BURLINGTON NORTHERN & SANTE FE INTERMODAL TERMINAL Frontage Rd (US 64 to 77 Bypass), 77 Bypass (Frontage to SH 77), SH 77 (77 Bypass to terminal)	Truck/Rail

California	Facility Type
FRESNO AIR TERMINAL AIRPORT Clinton Way (Airport to McKinley), McKinley Av. (Clinton to Rt 4 1)	Airport
LOS ANGELES INTERNATIONAL AIRPORT Century Blvd (Sepulveda to I-405), Aviation Blvd (Century to I-105), La Cienega Blvd (Century to I-105), Imperial Hwy (La Cienega to Sepulveda), Sepulveda Blvd (Century to I- 1 05), 104th St (Aviation to La Cienega), 11 lth St (Aviation to La Cienega)	Airport

OAKLAND INTERNATIONAL AIRPORT Airport Dr (Hegenberger to Doolittle), Hegenberger Dr (Doolittle to I-880), 98th Ave (Airport Dr to I-880)	Airport
ONTARIO INTERNATIONAL AIRPORT Archibald Ave (Airport to Rt 10) Vineyard Ave (Airport to Rt. 10)	Airport
LINDBURGH FIELD - SAN DIEGO N. Harbor Dr. (Terminal to W. Laurel St), W. Laurel St (N. Harbor Dr to I-5)	Airport
SAN FRANCISCO INTL AIRPORT San Bruno Ave (US 101 to Airport Entrance)	Airport
SAN JOSE INTL AIRPORT Served by an Existing NHS Route	Airport
PORT OF LONG BEACH Ocean Blvd (Port to SR-710), 9th/10th St (Santa Fe to Pico), Pico Ave (9th/10th to Ocean Blvd), Santa Fe (Anaheim to 9th), Anaheim St (Sante Fe to Alameda)	Port
PORT OF LOS ANGELES Seaside Ave (Ferry St to SR 47) Gibson Blvd (Port to B), B St (Gibson to Alameda), Alameda St (B to Anaheim) - B St is now Harry Bridges Blvd Figueroa St (B to C), C St (Figueroa to I-l 10)	Port
PORT OF SAN FRANCISCO Cargo Way (Jennings to 3rd), 3rd St (Cargo Way to Cesar Chavez), Cesar Chavez St. (3rd St to Route 101) - (Cargo Way proposed)	Port
PORT OF OAKLAND Maritime St (7th to W Grand Ave), W Grand Ave (Maritime to I-880), 7th St (Maritime to I-880)	Port
PORT OF RICHMOND Harbour Way (Terminal to I-580) Canal Blvd (Terminal to I-580)	Port
PORT OF SACRAMENTO Enterprise Blvd (Industrial Rd to I-80), Industrial Blvd (Enterprise Blvd to Harbor Blvd), Harbor Blvd (Industrial Blvd to US 50)	Port
PORT OF REDWOOD CITY Seaport Blvd. (Port to Rt. 101) Bloomquist St (Seaport Blvd to Maple), Maple St (Bloomquist to Facility)	Port
PORT HUENEME Hueneme Rd (Port to Los Pasos), Los Pasos (Hueneme to US 101) Ventura Rd (Hueneme to Channel Island), Channel Island Blvd (Ventura to Victoria), Victoria Ave (Channel Island to US 101)	Port
PORT OF SAN DIEGO Pacific Hwy (Laurel to NSC Compound), Grape St (Pacific Hwy to I-5), Hawthorne St (Pacific Hwy to I-5), Broadway (Pacific Hwy to 1 lth), 1 lth St.(Broadway to I-5)	Port
PORT OF HUMBOLT Washington St. (Port to Rt. 101)	Port
CHANNEL ISLANDS HARBOR Victoria Ave (Terminal to Rte 101)	Port
PORT OF BENICIA Bayshore Rd. (Port to Park), Park Rd. (Bayshore to Industrial), Industrial Way (Park to I-680)	Port
PORT OF STOCKTON Harbor St (Terminal to Fresno), Fresno Ave (Harbor to Navy), Navy Dr (W Washington to Charter Way), Charter Way (Navy to I-5), W Washington St (Navy to Fresno)	Port
EUREKA PIPELINE TER. Washington St. (Port to Rt. 101)	Truck/Pipeline

LOS ANGELES 2 PIPELINE TER. Served by an Existing NHS Route	Truck/Pipeline
LOS ANGELES 1 PIPELINE TER. Served by an Existing NHS Route	Truck/Pipeline
FRESNO TOPC RAIL YARD North Ave. (Facility to Rt.99)	Truck/Rail
LONG BEACH (CARSON) RAIL YARD Sepulveda Blvd. (Facility to Rt. 47)	Truck/Rail
OAKLAND RAIL YARD Middle Harbor Rd. (7th St to I-880)	Truck/Rail
LATHROP RAIL YARD -Roth Rd. (Airport Rd to I-5), Airport Rd (Roth to French Camp), French Camp Rd (Airport to SR 99)	Truck/Rail
LA (NR. UNION STATION) Lamar St. (Station to N. Main), N Main St (Lamar to Daly), Daly St (N Main to N Mission), Mission Rd. (Daly to I-5) Ave 20 (N Main to N Broadway), N Broadway (Ave 20 to I-5)	Truck/Rail
RICHMOND RAIL YARD Canal Blvd. (Facility to I-580)	Truck/Rail
LA ATSF RAIL YARD Washington Blvd. (Hobart Yard to I-710) Shelia St (Arrowmile to Atlantic), Atlantic Blvd (Shelia to Bandini), Bandini Blvd (S Downey to I-71 0) - Connector 2 is proposed)	Truck/Rail
STOCKTON RALL YARD Anderson St. (Facility to Diamond St.), Diamond St (Anderson to Charter Way), Charter Way (Diamond to SR 99), Mariposa Rd (Charter Way to SR 99)	Truck/Rail
SAN BERNADINO RAIL YARD 2nd St (I-215 to Mt Vernon), Mount Vernon (4th St to Rialto), 4th St (Mt Vernon to 5th), Rialto Ave (Mt Vernon to Sidewinder Mountain Rd)	Truck/Rail
CITY OF INDUSTRY RAIL YARD Azusa Ave (Anaheim-Puente Rd to SR 60), Anahein-Puenta Rd to Arenth Ave) Fullerton Rd (Arenth Ave to SR 60)	Truck/Rail
LA/VERNON FACILITY Washington St. (Facility to I-7 10) - Included in LA ATSF Railyard (CA66R)	Truck/Rail
UPS - RICHMOND TERMINAL Atlas Rd (Facility to Richmond Parkway), Richmond Pkwy (Atlas to I-80)	Truck/Rail

Colorado

	Facility Type
UNION PACIFIC RR AUTO TRANSFER From I-76: E 0.1 mi on 96th Ave, N 0.5 mi on I-76 Frontage Road to Terminal Entrance	Truck/Rail
BURLINGTON NORTHERN RR AUTO TRANSFER From I-76: E 1.6 mi on 88th Ave, N 0.5 mi on Yosemite Ave to Terminal Entrance	Truck/Rail
KANEB PIPELINE TRANSFER From I-76: E 0.1 mi on 88th Ave, S 1.3 mi on Brighton Rd, E 0.3 mi on 80th St to entr at Krameria St	Truck/Pipeline
SOUTHERN PACIFIC RR TRANSFER FACILITY . From I-76: South on Pecos Street to Terminal Entrance at 56th Avenue	Truck/Rail
BURLINGTON NORTHERN RR TRANSFER FACILITY 53rd Pl. to Bannock St. to Broadway to 58th Ave. to S.H. 53 to I-25.	Truck/Rail
CONOCO PIPELINE TRANSFER From U.S. 6: W 0.8 mi on 56th Avenue to Terminal Entrance at Brighton Blvd	Truck/Pipeline
UNION PACIFIC RR TRANSFER FACILITY From S.H. 2 (Colorado Blvd): W 1.4 mi on S.H. 33 (40th Ave) to terminal entrance at Williams Street	Truck/Rail

TOTAL PETROLEUM PIPELINE TERMINAL (Same as Conoco Pipeline)	Truck/Pipeline
PHILLIPS PIPELINE (Same as Conoco Pipeline)	Truck/Pipeline
DENVER INTERNATIONAL AIRPORT Pena Blvd (E 470 interchange E 0.7 mile)	Airport

Connecticut

	Facility Type
BRADLEY INTERNATIONAL AIRPORT SR 401 (SR 20 to Airport Entrance), SR 20 (I-91 to SR 401)	Airport
NEW LONDON STATE PIER SR 437 (Rt. 32 to State Pier)	Port

Delaware

	Facility Type
PORT OF WILMINGTON Terminal Ave (Port to I-495)	Port

Florida

	Facility Type
PENSACOLA SEAPORT Bayfront Pkwy (Entrance to 9th Ave), 9th Ave. (Bayfront to I-l 10/US 98)	Port
PORT EVERGLADES - FORT LAUDERDALE Eller Dr. (SE 7th Ave. to SE 19th Ave.)	Port
PORT OF PALM BEACH US 1 (Entrance to Blue Heron), Blue Heron Blvd. (US 1 to I-95)	Port
PORT MANATEE Piney Point Rd. (Dock St. to US 41), US 41 (Piney Point to I-275)	Port
CSX INTERMODAL - ORLANDO Orange Ave. (Facility to Sand Lake Rd.), Sand Lake Rd. (Orange Ave to SR-528)	Truck/Rail
ORLANDO INTERNATIONAL AIRPORT Boggy Creek Rd. (Entrance to SR 4 17)	Airport
PORT CANAVERAL George King (Port to A1A), Dave Nisbet Dr (George King to SR 528), SR 528 (Dave N. to SR 401)	Port
MIAMI INTL AIRPORT LeJueune Rd. (Entrance to SR 836), 21st St. (LeJeune to 37th St.), 37th St. (21st to SR 836) NW 25th St. (Ludlam Rd. to SR 826)	Airport
PORT OF MIAMI Port Blvd. (Entrance to Biscayne), Biscayne Blvd. (Port Bl to I-395)	Port
PARSEC - MIAMI NW 36 St. (NW67 to SR826), NW 72nd(SR836 to NW25), NW 67th Av. (SR948 to NW25), NW 25th(SR826 to NW67)	Truck/Rail
PARSEC (NORTH) - MIAMI Hialeah Expressway (NW 72nd St to R 826)	Truck/Rail
PARSEC (EAST COAST RR) -JACKSONVILLE US 1 (Entrance to University Blvd.), University Blvd. (US 1 to I-95)	Truck/Rail
JACKSONVILLE INTL AIRPORT SR 102 (Entrance to I-95)	Airport
NORFOLK SOUTHERN YARDS Old Kings Rd. (Entrance to US 23), US 23 (Old Kings Rd. to I-95)	Truck/Rail

JACKSONVILLE PORT AUTHORITY Talleyrand Ave. to 21st St. to Phoenix Ave. to US 1 Alt. to I-95)	Port
JACKSONVILLE PORT AUTHORITY - BLOUNT Dave Rawls Blvd.	Port
CSXT BULK INTERMODAL FACILITY Sportsman Club Rd (Entrance to Pritchard Rd.), Pritchard Rd. (Sportsman Cl. to I-95)	Truck/Rail
PORT OF TAMPA Wynkoop Rd. (Port to Grant), Grant St. (Wynkoop to 22nd), 22nd St. (Grant to I-4), 21st St (Grant to I-4)	Port
TAMPA INTERNATIONAL AIRPORT Served by an Existing NHS Route - SR 60	Airport
FT. LAUDERDALE INTERNATIONAL AIRPORT Served by an Existing NHS Route	Airport
PARSEC - FT. LAUDERDALE Served by an Existing NHS Route	Truck/Rail
PARSEC - WEST PALM BEACH Served by an Existing NHS Route	Truck/Rail
PORT OF FERNANDINA Dade St (Entrance to 8th), 8th St. (Dade SR A1A), SR A1A (8th to I-95)	Port
PORT OF FORT PIERCE US 1 (Facility @SR A1A to SR 608)	Port
PORT OF PANAMA CITY Served by an Existing NHS Route - US 98	Port
PORT OF KEY WEST Served by an Existing NHS Route - US 1	Port

Georgia

	Facility Type
COLONIAL PIPELINE, ALBANY From SR 62 / US 19 Business: west 0.5 mi on SR 234 to the front of the terminal	Truck/Pipeline
HARTSFIELD INTL. AIRPORT, ATLANTA I-85 exit 18-A, NE 1.25 mi on CR 2045; and 0.41 mi on CS 800111 to the N Cargo Building I-75 exit 82,W 0.07 mi to Aviation Blvd. (Cr 15 16), N 0.7 mi on CR 1568 and 0.68 mi on CS 800111 to N Cargo Building I-75 exit 82, 0.4 1 mi on CR 2296 and 1.2 1 mi on CR 15 16 to Dead end.	Airport
ATLANTA HULSEY RAIL YARD From I-20 (ex 26): north 0.5 miles on CS052003 to the truck/rail facility	Truck/Rail
ATLANTA INMAN RAIL YARD From I-285: S 1.3 mi on S. Cobb Dr. and SR 280, NE 1.0 mi on Bolton Rd, SE 2.3 mi on Marietta Rd	Truck/Rail
NORFOLK SOUTHERN RAIL YARD, ATLANTA From Lakewood Freeway (SR 166) Sylvan Rd exit right 0.1 mi and left on Lakewood Ave, 0.4 mi to Terminal.	Truck/Rail
CHATTAHOOCHEE COLONIAL PIPELINE, ATLANTA From S. Cobb Dr. and SR 280: S 0.9 mi on Bolton Rd, N 0.2 mi on Parrot Avenue	Truck/Pipeline
DORAVILLE COLONIAL & PLANTATION PIPELINE From I-285, Exit #25 North on Buford Highway (SR 13) 0.3 mile to Longmire Way, left 0.2 mile to Winters Chapel/Flowers Road, left and right to rail, truck, and pipeline gates.	Truck/Pipeline
COLONIAL PIPELINE, MACON From I-475: E 2.7 mi on Zebulon Rd (CR 726), NE 0.4 on SR 19, to pipeline terminal	Truck/Pipeline
COLONIAL PIPELINE, SOUTH MACON From I-75: E 2.9 mi on Hartley Bridge Rd, S 0.4 mi on Houston Rd, E 1.1 mi on CR 738 to SR 247	Truck/Pipeline
COLONIAL PIPELINE, ROME From SR-1 Loop: north 2.1 mi on CR 796 to the terminal yard	Truck/Pipeline

GARDEN TERMINAL, SAVANNAH From SR 2 1: E 1.1 mi on SR 307 and N 0.50 mi on SR 25 to port entrance From I-5 16, north 2.7mi on SR 25 to SR 307	Port
OCEAN TERMINAL, SAVANNAH From W Lathrop Ave (CR 1142), SE 0.65 mi on Lathrop Ave (Cr 740) and 0.16 mi on River St (CS-014507) to the terminal	Port
CSX RAILYARD, SAVANNAH From I-5 16: N&W 0.70 mi on Tremont Rd, N 0.1 mi on Tremont Ave, W 0.2 mi on Safety First Rd	Truck/Rail
COLONIAL PIPELINE, AMERICUS From SR 27AJ.S. 19: southwest 0.4 mi on U.S. 280 to the pipeline terminal	Truck/Pipeline
COLONIAL PIPELINE, GRIFFIN From SR3/US 19: E 0.4 mi on East McIntosh Rd, N 0.4 mi on Old Atlanta Rd, E 1.3 mi on McIntosh Rd	Truck/Pipeline
DIXIE PIPELINE, MILNER From I-75: SW 7.9 mi on SR 36, SW 3.0 mi on Liberty Hill St, N 2.6 on Old 41 Highway	Truck/Pipeline
COLONEL'S ISLAND TERMINAL, BRUNSWICK From SR-520/US 17 north on CR 1108, 1.O mi to the terminal	Port
COLONEL'S ISLAND TERMINAL, BRUNSWICK From SR-520/ US 17; North 0.6 mi on Public Road 1108 to the rail yard gates	Truck/Rail

Hawaii

	Facility Type
HONOLULU INTERNATIONAL AIRPORT H- 1 Freeway on-ramp to Terminal	Airport
HONOLULU HARBOR Forest Ave. (Ala Moana Blvd to terminal)	Port
KAHULUI AIRPORT Airport Access Extension (Terminal to Kuihelani Hwy) - proposed	Airport
KAHULUI HARBOR Ala Luina Street (Hobron Ave to terminal)	Port
HILO INTERNATIONAL AIRPORT Access Rd	Airport
HILO HARBOR Kuhio Street/Kalanianaole Avenue	Port
KAWAIHAE HARBOR Kawaihoe Rd (Akoni Pule Hwy to Queen Kaahumanu Hwy)	Port
KEAHOLE INTERNATIONAL AIRPORT Airport Access Rd.(Queen Kaahumanu Highway to Terminal)	Airport
LIHUE AIRPORT Ahukini Road (End of NHS Route to terminal)	Airport
NAWILIWILI HARBOR Served by an Existing NHS Route	Port
KAPALAMA BASIN PORT TERMINAL Kukahi Street (Terminal to Nimitz Hwy)	Port
BARBERS POINT DEEP DRAFT HARBOR Malakole Road and Kalaeloa Boulevard	Port

Idaho

	Facility Type
CURTIS RD PIPELINE TERMINAL Served by an Existing NHS Route	Truck/Pipeline
PORT OF LEWISTON Served by an Existing NHS Route	Port

Illinois	Facility Type
SCHILLER PARK EAST Lawrence Ave. (Entrance to US 45)	Truck/Rail
BENSENVILLE Entrance on Franklin Ave. to Williams Dr. to Belmont Ave. to US 45	Truck/Rail
GLOBAL TWO US 20 (Entrance to I-294) Railroad Ave. (US 20 to 1164)	Truck/Rail
CICERO/BN - CECO 28th St. (Entrance to 1150)	Truck/Rail
CICERO/BN - OGDEN Served by an Existing NHS Route	Truck/Rail
GLOBAL ONE 15th St. (Entrance to Ashland Ave), Ashland Ave. (15th to Frontage), Frontage Rd (Ashland to I-290) Ashland Ave. (15th to I-55)	Truck/Rail
WESTERN AVE BURLINGTON NORTHERN Blue Island (Western to Ashland), Damen (Blue Island to 30th) 3 1 st (Western to California), California (3 1st to I-55) - proposed	Truck/Rail
26TH ST./UNION PACIFIC Canal St (Entrance to Archer), Archer Av. (Canal to Cermak), Cermak (Archer to X-90194) Canal St. (Archer to 18th St), 18th St (Canal to I-90/94)	Truck/Rail
RAILPORT - CANADIEN NATIONAL 43rd St. (Entrance to Ashland), Ashland Ave. (43rd to I-55) Ashland Ave (43rd to 47th), 47th St (Ashland Ave to I-90/94) 47th St (Ashland to Western Ave)	Truck/Rail
CANADIEN NATIONAL - LUMBER 5 1st St.(Entrance to Kedzie), Kedzie Ave (5 1st to 47th)	Truck/Rail
CORWITH /BN AND SF Kedzie Ave (Entrance @ 41st ST to I-55) Kedzie Ave (Entrance to 47th), 47th St (Kedzie to Western) 47th St (Kedzie to Pulaski), Pulaski (47th to I-55), 41st St (Entrance to Pulaski)	Truck/Rail
47TH YARD - CONRAIL 5 1st St. (Entrance to I-90/94) 47th St. (Normal to I-90/94)	Truck/Rail
63RD **YARD - CONRAIL** 63rd St (Entrance to I-90/94), Frontage (63rd to I-90/94) 61st St (Entrance to State), State St (59th to 63rd), 59th (State to Frontage)	Truck/Rail
FOREST HILL - CSX INTERMODAL 79th St. (Entrance to Western Ave.)	Truck/Rail
LANDERS - NORFOLK SOUTHERN 79th St. (Cicero to Western)	Truck/Rail
BEDFORD PARK - CSX INTERMODAL 71st St. (Entrance to IL 43) Frontage Rd. (Entrance to IL 43) Sayer (71st to 73rd), 73rd (Sayer to Cicero) Central (Entrance to 73rd)	Truck&ail
WILLOW SPRINGS/HODGKINS/BN/SF 75th St. (Entrance to I-294) Santa Fe Dr (Entrance to 67th), 67th St (Santa Fe to US 45)	Truck/Rail
IOWA INTERSTATE 119th St. (Wolcott to I-57)	Truck/Rail
YARD CENTER/UNION PACIFIC Sibley Rd. (Entrance to I-94)	Truck/Rail

Kansas	Facility Type
MID-CONTINENT AIRPORT, WICHITA From U.S. 54: South 1.9 mi on Mid-Continental Drive and 0.5 mi on Air Cargo Rd	Airport
SANTE FE TERMINAL, KANSAS CITY From I-635 (ex 3): E 0.5 mi on K-32, S 0.1 mi on 39th, E 0.1 mi on Fairbanks, S 0.1 mi on 38th From US. 69: W 1.3 mi on K-32 to 39th St (links to connector 1)	Truck/Rail
SOUTHERN PACIFIC'S KANSAS CITY INTERMODAL FACILITY From I-635 (ex 3): E 1.7 mi on K-32 (connector for SF Term), N 0.2 mi on 18th, W 0.3 mi on Baynard From U.S. 69: follow 18th St N and Baynard Ave W - as in SF terminal	Truck/Rail
WILLIAMS PIPELINE TERMINAL From I-635 (ex 8): E 2.2 mi on K-5, E 1.1 mi on Sunshine Rd, S 1.0 on Fairfax Trafficway E/N 0.5 mi on Donovan From I-70 (ex 423): N 1.7 mi on Fairfax Traffrcway to Donovan Rd (links to Connector 1)	Truck/Pipeline

Kentucky	Facility Type
OWENSBORO IUVERPORT KY 331 (US 60 to Harbor Rd), Harbor Rd (KY 331 to Facility)	Port
CAMPGROUND RD PETROLEUM PIPELINE Campground Rd (Cane Run to Ralph), Kramers Lane (Cane Run to Campground), Ralph Ave (Cane Run to Campground Rd)	Truck/Pipeline
BELLS LANE PETROLEUM/CHEMICAL PIPELINE KY 2056 from I-264 W to the Louisville-Ohio River Floodwall	Truck/Pipeline
LOUISVILLE INTERNATIONAL AIRPORT Grade Lane (I-264 to UPS Feedor Truck Entrance), FS 8879 (I-264 to Facilty)	Airport
NORFOLK SOUTHERN INTERMODAL - LOUISVILLE Newburg Rd (I-264 to Bishop), Bishop Lane (Newburg to Jennings), Jennings Lane (Bishop to Facility)	Truck/Rail
CINCINNATI/N KY INTERNATIONAL AIRPORT KY 2 12 from I-275 S to the Airport Roadway System	Airport
NORFOLK SOUTHERN INTERMODAL - GEORGETOWN KY 620 - Facility to I-75 Interchange	Truck/Rail
LOUISVILLE/ASHLAND OIL/CHEVRON DIST. CENTER KY 1681 - KY 4 Interchange to Facility	Truck/Pipeline
TRUCK TO BARGE COAL DOCK CLUSTER, BOYD CNTY KY 757 from US 23 near Lockwood to 2.3 Miles North	Port
GOLDEN OAK MINING CO. KY 7 (KY 15 to KY 931), KY 931 (KY 7 to Facility)	Truck/Rail
MCCOY ELKHORN COAL CORP KY 194 - US 119 to Facility	Truck/Rail
IVEL COAL TIPPLE County Rd 1020 - US 23 to Facility	Truck/Rail
PRAISE DOCK COAL TIPPLE KY 80 from US 460 to Facility	Truck/Rail
CLARK ELKHORN COAL TIPPLE KY 1441 (US 460 to Clark Elkhorn Tipple #1 Entrance), KY 1789 (US 460 to KY 1441)	Truck/Rail
CAMPGROUND RD PETROLEUM PORT Same as Campground Road Petroleum Pipeline	Port
BELLS LANE PETROLEUM/CHEMICAL PORT KY 2056 - Louisville-Ohio Floodwall to I-264	Port

Louisiana	Facility Type
PORT OF BATON ROUGE Served by an Existing NHS Route	Port
PORT OF LAKE CHARLES - CITY DOCKS Marine Rd (Terminal to Sallier St), Proposed New Access Rd (Sallier St to Prien lake Rd), LA 1138-2 (Prien Lake Rd to I-210)	Port
PORT OF LAKE CHARLES - BULK TERMINAL Coke Plant Rd. to Bayou D'Inde to LA 108 to I-10	Port
PORT OF LAKE CHARLES - SOUTH SIDE TER. Big Lake Rd to Country Club Rd. to Nelson Rd (LA 1138) to I-210	Port
NEW ORLEANS INTERNATIONAL AIRPORT Airport Rd. (Entrance to Veterans Memorial Blvd), Veterans Memorial Blvd (Airport Rd. to LA 49) Crofton Rd. (Entrance to US 61)	Airport
UNION PACIFIC - AVONDALE TERMINAL Avondale Garden Rd. (Terminal to US 90)	Truck/Rail
BNSF - WESTWEGO TERMINAL Bridge City Ave {LA 18} (Terminal to US 90)	Truck/Rail
KANSAS CITY SOUTHERN - METAIRE TER. Labarre Rd. (Terminal to US 61)	Truck/Rail
ILLINOIS CENTRAL - NEW ORLEANS TER. Tchoupitoulas St. (Terminal to US 90) and Felicity St. to Religious St to Tchoupitoulas St	Truck/Rail
NORFOLK SOUTHERN - NEW ORLEANS TER. Florida Ave. (Terminal to LA 3021)	Truck/Rail
CSX - NEW ORLEANS TERMINAL Almonaster Rd (Terminal to Alvar Rd) Almonaster Ave (Terminal to I-5 10)	Truck/Rail
PORT OF NEW ORLEANS - FRANCE ROAD TER. Served by an Existing NHS Route	Port
PORT OF NEW ORLEANS - JOURDAN ROAD TER. Jourdan Rd. (Terminal to Almonaster Rd.)	Port
PORT OF NEW ORLEANS - DOWNTOWN WHARVES Chartres St.(From Poland St.) to Ferdinand to N. Peters to Esplanade to Elysian Fields to LA 46	Port
PORT OF NEW ORLEANS - MISSISSIPPI RIVER TERMINAL Felicity St (Terminal to Religious St), Religious St (Felicity to Euterpe), Tchoupitoulas St (Felecity to US-90)	Port
SHREVEPORT REGIONAL AIRPORT Monkhouse Rd. (Terminal to I-20)	Airport
UNION PACIFIC - REISOR TERMINAL LA 526 (Terminal to I-20)	Truck/Rail
PORT FOURCHON Fourchon Rd (Waterfront to Chevron Canal), LA 3090 (Chevron Canal to LA 1)	Port
KCS - DERAMUA YARD LA 173 (Terminal to I-220)	Truck/Rail

Maine	Facility Type
PORTLAND FREIGHT TERMINAL DISTRICT From I-95 (exit 7): south 2.1 mi on ME Turnpike Approach Road to U.S. 1	Truck/Rail
MERRILL MARINE TERMINAL (PORT) From I-295 (exit 5): 0.8 mi E on SR 22/Congress St, 0.8 mi S on U.S. 1, 0.2 mi E on U.S. IA From I-295 (exit 4): 1.0 E on U.S. IA to intersection with U.S. 1 (and join connector #1)	Port

UPPER RIVER ROUGE - PORT #2	Port
Dix Ave. (Port to Livemois Ave), Oakwood (Dix to Schaffer), Schaffer Hwy (Oakwood to I-75)	
NORFOLK SOUTHERN - OAKWOOD	Truck/Rail
Hess St. (Terminal to Schaffer), Schaffer Hwy (Hess St to I-75)	
NORFOLK SOUTHERN - TRIPLE CROWN	Truck/Rail
S. Wabash St. to Dix Ave (Outer Dr. to Schaffer Hwy to I-75)	
UPPER DETROIT RIVER PORT #1	Port
Atwater (Entrance to St. Aubin St.), St. Aubin St. (Atwater to Jefferson)	
UPPER DETROIT RIVER PORT #2	Port
Atwater St. (Entrance to Riopelle), Riopelle St.(Atwater to Jefferson)	
DETROIT - CP RAIL SYSTEM OAK YARD	Truck/Rail
Served by an Existing NHS Route	
DETROIT - WILLOW RUN AIRPORT	Airport
US 12 (Entrance to I-94)	
FERNDALE - CN NORTH AMERICA MOTERM	Truck/Rail
Fern St. (Terminal to Fair St.), Fair St. (Fern to M 102)	
GRAND RAPIDS - KENT CO. INTL AIRPORT	Airport
44th St. (M 37 to Patterson), Patterson Ave (44th to M 11)	
FLINT - BISHOP AIRPORT	Airport
Served by an Existing NHS Route	
LANSING - CAPITOL CITY AIRPORT	Airport
Capitol City Blvd.(Entrance to Grand River Blvd)	
MARQUETTE PORT	Port
Hampton St. (Terminal to US 41/M-28)	
SAGINAW RIVER - LOWER (PORT) #1	Port
Marquette St. (Port to Truman Pkwy)	
SAGINAW RIVER - LOWER (PORT) #2	Port
Woodside Dr. (Pine St to Trumbell St.)	
SAGINAW RIVER - UPPER (PORT) #1	Port
Westervelt Rd. (Port to Kochville), Kochville Rd (Westervelt to Adams), Adams Rd. (Kochville to I-75)	
SAGINAW RIVER - UPPER (PORT) #2	Port
Served by an Existing NHS Route	
ST. JOSEPH PORT	Port
Served by an Existing NHS Route	
WOODHAVEN - APL	Truck/Rail
King Rd. (Terminal to Allen Rd), Allen Rd (King Rd to West Rd.)	
NEW BOSTON AUTO RAMP	Truck/Rail
Sibley Rd. (Terminal to I-275)	

Minnesota

	Facility Type
MINNEAPOLIS/ST. PAUL AIRPORT	Airport
TH 5 (TH 55 to Post Rd.)	
DULUTH SEA PORT	Port
From I-535: NW 0.9 mi on Garfield Road to Railroad Street	

Mississippi

	Facility Type
PORT OF PASCAGOULA (EAST)	Port
From US 90: Southerly 3.8 mi on MS 611 to port	
PORT OF BILOXI	Port
Served by an Existing NHS Route	

PORT OF GREENVILLE From U.S. 82: southwesterly 2.8 mi on Harbor Front Road to port entrance	Port
PORT OF GULFPORT From U.S. 90: south 0.6 mi on port access road to port From I-10: south 0.1 mi on Canal Rd, 5.6 SE mi on new location, S 2.4 mi 30th Ave Ext to port	Port
PORT OF COLUMBUS From U.S. 82: southerly 2.7 mi on port access road to port	Port
PORT OF ITAWAMBA From U.S. 78: north 0.3 mi on MS 25, west 0.6 mi on South Access Route to port	Port
PORT OF NATCHEZ Government Fleet Rd (US 65 to Providence), Providence Rd (Government Fleet to River Terminal Rd), River Terminal Rd (Providence to Port)	Port
PORT OF YAZOO MS 3 (US 49W to River Rd), River Rd (MS 3 to Levee Rd), Levee Rd (River Rd to port)	Port
PORT OF BIENVILLE From U.S. 90NS 607: SW 3.8 mi on U.S.90, then southerly on 6.0 mi on Ansley Rd to Port	Port
PORT OF ARMORY From U.S. 45: E 5.7 mi on U.S. 278, N 0.6 mi on Waterway Dr, W 0.2 mi on Port Access Road to port	Port
JACKSON INTERNATIONAL AIRPORT From I-20 (ex 52): Northerly 2.8 mi on MS 475 to Airport Road to Airport	Airport
IC RAILROAD N Mill St. (Facility to W. Wilson), Woodrow Wilson (N Mill to I-55) Pearl/Pascagoula St (one way pair) from I-55 to Mill St then North to IC Railroad	Truck/Rail
PORT OF PASCAGOULA (WEST) From US 90: N Access Ramp onto E-Bound loop under US 90 0.4 mi to S access Ramp & S 0.85 mi on River Edge Rd plus 0.5 mi one-way S then 0.5 mi one-way, then 0.35 mi SE to Port	Port
PORT OF VICKSBURG (SOUTH) and PORT OF VICKSBURG (NORTH) From US 61: S 4.3 mi on Washington St to Connector #2, to 1.5 miles S on Mulberry St, Dorsey St, and Lewe St From I-20: W 2.6 mi on Clay St, Cherry St, & 1st East St, then N 1.8 mi on Washington and W 2.9 miles on Haining Rd	2 Ports
PORT OF ROSEDALE Port Access Rd to Russell Crutcher to MS 8 to US 61	Port

Missouri

	Facility Type
LAMBERT INTERNATIONAL AIRPORT, ST. LOUIS Served by an Existing NHS Route	Airport
KANSAS CITY INTERNATIONAL AIRPORT From I-29/435 (ex 15): S 1.5 mi on Mexico City Ave to Air Cargo Facility on Paris Street	Airport
SPRINGFIELD REGIONAL AIRPORT Directly Accessible from NHS	Airport
MULTIPLE PORTS ON MS RIVER, ST. LOUIS Served by an Existing NHS Route	Port
SEMO PORT, SCOTT CITY From I-55 (exit 91): Easterly 4.0 mi on Route AB to entrance to Semo Port	Port
KANSAS CITY SOUTHERN, KANSAS CITY South on Chouteau Freeway from Route 210 (Shared access with Union Pacific)	Truck/Rail
UNION PACIFIC, KANSAS CITY From Route 2 10 intermodal connector: S 2.0 mi on Chouteau Trafficway to facility entrance on Gardner	Truck/Rail
NORFOLK SOUTHERN/TRIPLE CROWN, KC From I-29/35 (ex 6B): E 5.5 mi on Route 2 10 to Facility Entrance From State Route 291: SW 4.5 mi on Route 2 10 to Facility Entrance	Truck/Rail

BURLINGTON NORTHERN, KANSAS CITY	Truck/Rail
From I-29/35 (ex 6B): E 5.5 mi on Route 210 to Facility Entrance	
From State Route 29 1: SW 4.5 mi on Route 2 10 to Facility Entrance	
NORFOLK SOUTHERN/TRIPLE CROWN, ST. LOUIS	Truck/Rail
From I-70 (exit 246): NE 0.3 mi on Adelaide, NW 1.5 mi on Hall to intermodal facility	
From I-270 (exit 34): SW 5.7 mi on Riverview Dr and continuing on Hall Street to terminal	
PORT OF ST. LOUIS #2	Port
7th St. (I-55/44 to I-55)	

Nebraska

	Facility Type
EPPLEY AIRPORT	Airport
Fort Court (Abbott to Lockheed Ct), Lockheed Ct (Fort Court to Post Office)	
WILLIAMS PIPELINE	Truck/Pipeline
1 lth St (Terminal to Izard), Izard (1 1th to 14th), 14th St (Izard to I-480)	
UNION PACIFIC RAILROAD	Truck/Rail
Leavenworth (Terminal to 14th), 14th (Leavenworth to I-480), 13th (Leavenworth to I-480)	
BURLINGTON NORTHERN RAILROAD	Truck/Rail
Gibson St (Terminal to Missouri), Missouri (Gibson to 12th), 12th St (Missouri to J), J St (12th to 13th), 13th St (J to I-SO)	

Nevada

	Facility Type
MCCARRAN INTERNATIONAL AIRPORT	Airport
Airport Connector (Entrance to I-2 15)	
RENO TAHOE INTERNATIONAL AIRPORT	Airport
Plumb Lane. (Entrance to I-580)	

New Hampshire

	Facility Type
ANCHESTER AIRPORT	Airport
From I-293 (exit 3): S 1.4 mi on Brown Ave (SR 3A) to airport	
PORT OF PORTSMOUTH	Port
From I-95 (ex 6): E 0.7 mi on Market Street to the Port	

New Jersey

	Facility Type
RAIL TERMINAL AT PULASKI SKYWAY	Truck/Rail
Served by an Existing NHS Route	
PORT NEWARK RAIL TERMINAL	Truck/Rail
Served by an Existing NHS Route	
PORT OF JERSEY CITY	Port
Served by an Existing NHS Route	
UNION CITY RAIL TERMINAL	Truck/Rail
Served by an Existing NHS Route	
PORT ELIZABETH RAIL TERMINAL	Truck/Rail
Served by an Existing NHS Route	
PORT NEWARK	Port
Served by an Existing NHS Route	
NEWARK INTERNATIONAL AIRPORT	Airport
Served by an Existing NHS Route	

NEWARK RAIL TERMINAL	Truck/Rail
Served by an Existing NHS Route	
PORT OF CAMDEN (NORTH)	Port
Served by an Existing NHS Route	
PORT OF CAMDEN (CENTRAL)	Port
Served by an Existing NHS Route	
PORT OF CAMDEN (SOUTH)	Port
Served by an Existing NHS Route	

New Mexico

	Facility Type
ALBUQUERQUE INTERNATIONAL AIRPORT	Airport
Served by an Existing NHS Route	

New York

	Facility Type
TEWART INTERNATIONAL AIRPORT	Airport
Breunig Rd. (A St. to NY 207), NY 207 (Breunig to NY 300), NY 300 (NY 207 to I-84)	
NY 207 (Breunig Rd. to CR 54), CR 54 (NY 207 to I-84)	
WEST SIDE PASSENGER SHIP PIERS	Port
Served by an Existing NHS Route	
KENNEDY AIRPORT	Airport
Guy Brewer Blvd. (Entrance to Rockaway Blvd)	
Farmers Blvd. (Entrance to Rockaway Blvd.)	
150th St. (Entrance to N. Conduit Ave.),	
Lefferts Blvd. (Entrance to N. Conduit Ave.)	
65TH STREET INTERMODAL TERMINAL	Port
65th St. (Entrance at 2nd Ave. to Gowanus Expressway)	
HARLEM RIVER INTERMODAL YARD	Truck/Rail
Brown Pl from Entrance to E. 132nd St to Alexander Ave. to E. 135th St. to I-87	
Brown Pl (entrance to E 134th St.), E. 134th St. (Brown Pl. to I-87 SB)	
BRONX TERMINAL MARKET	Truck/Rail
E. 15 1 st St. (Entrance to Grand Concourse)	
E.151st St. (Entrance to River), River Ave. (E. 151st to E. 157th), E. 157th St. (River to I-87 NB)	
E. 151st St. (Entrance to River), River (E. 151st to E 153rd), E. 153rd St. (River to I-87 SB)	
SOUTH BROOKLYN MARINE TERMINAL	Port
2nd Ave. (terminal to 39th St.), 39th St (2nd Ave. to Gowanus Pkwy)	
RED HOOK CONTAINER TERMINAL	Port
Union Street (Van Burnt St. Entrance to Columbia St.)	
65TH STREET LIRR BAY RIDGE TERMINAL	Truck/Rail
65th St. (2nd Ave. Entrance to Gowanus Pkwy)	
HUNTS POINT MARKET TRUCK TERMINAL	Truck/Rail
Market Loop to Hunts Point Ave. to Randall Ave. to Leggett Ave. to Bruckner Blvd EB to Triborough Bridge. Also, Leggett Ave. to Bruckner Blvd. WB to Major Deegan Expressway (I-87)	
Tiffany St. at Randall to Garrison Ave. to Barretto St. to Bruckner Blvd. WB to Whitlock Ave. Also,	
Tiffany St. to Bruckner EB to Bruckner Expressway	
Halleck St to Edgwater Rd. to Bruckner Blvd EB to Bruckner Expressway. Also, Garrison Ave. to Hunts Point Ave. to Bruckner Expressway	
HOWLAND HOOK MARINE TERMINAL	Truck/Rail
Entrance on Richmond Terrace to Western Ave. to Goethals Rd. to Forest Ave. to Staten Island Expressway	
Entrance on Richmond Terrace to Western Ave. to Gulf Ave to Staten Island expressway EB and West Shore Expressway SB	
Also Forest Ave at Gulf Ave. to N. Goehals Rd. to Staten Island Expressway	

PORT OF ALBANY Church St. (Entrance to NY 32), NY 32 (Church to I-787 NB and SB exits)	Port
ALBANY COUNTY AIRPORT Delasandro Dr. (Entrance to Albany Shaker Rd.), Albany-Shaker Rd. (Delasandro to NY 7) Delasandro dr. (Entrance to NY 155), NY 155 (Delasandro Dr. to I-87)	Airport
CONRAIL - SELKIRK YARD CR 53 (Entrance to CR 55), Cr 55 (Cr 53 to US 9W), US 9W (CR 55 to NY 396), NY 396 (US 9W to NY 144), NY 144 (NY 396 to I-87)	Truck/Rail
PORT OF OSWEGO Served by an Existing NHS Route	Port
SYRACUSE-HANCOCK AIRPORT Airport Blvd. (Entrance to 1-81)	Airport
CONRAIL DEWITT YARD Central Ave. (Entrance to Freemont), Freemont Rd. (Central to Kirkville), Kirkville Rd. (Freemont to Girden Rd. (Entrance to Kirkville Rd.), Kirkville (Girden to I-481)	Truck/Rail
ROCHESTER AIRPORT Served by an Existing NHS Route	Airport
BUFFALO AIRPORT Served by an Existing NHS Route	Airport
PORT OF BUFFALO Served by an Existing NHS Route	Port
NORFOLK-SOUTHERN TRANSFER STATION Gruner Rd. (Entrance to Harlem), Harlem Rd. (Gruner to Walden), Walden Rd. (Harlem to I-90)	Truck/Rail
PORT OF OGDENSBURG Patterson St (Entrance to NY 37/812)	Port
SOUTH BROOKLYN RAILROAD YARD 39th St. (Rail Yard to Gowanus Pkwy)	Truck/Rail

North Carolina

	Facility Type
PETROLEUM PIPELINE TERMINAL - CHARLOTTE NC 27 between I-85 and SR 1784 (Mount Holly Rd)	Truck/Pipeline
CSX FREIGHT INTERMODAL FACILITY - CHARLOTTE Hovis Rd and NC 16 between I-85 and the Terminal Entrance	Truck/Rail
CHARLOTTE/DOUGLAS INTERNATIONAL AIRPORT End of SR 1490 to US 521 NC 160 (West Blvd) and Yorkmont Rd between US 521 and Airport entrance	Airport
NORFOLK SOUTHERN CORP. - CHARLOTTE N. Brevard St and Caldwell St/Parkwood Ave between I-277 and Terminal Entrance	Truck/Rail
STAR ENTERPRISE PIPELINE TERMINAL Shaw Mill Rd and Murchinson between the Proposed Outer Loop and terminal Entrance	Truck/Pipeline
PIEDMONT TRIAD INT AIRPORT - GREENSBORO SR 2085 between NC 68 and the Parking Lot Entrance	Airport
PETROLEUM PIPELINE TERMINAL - GREESBORO SR 1554 (Chimney Rock Rd) and SR 1008 between I-40 and Amoco Entrance on SR 1008	Truck/Pipeline
NORFOLK SOUTHERN CORP. - GREENSBORO Terminal Entrance to Merrit Dr to NC 6 to Holden Rd to Meadowview Rd to SR 4 12 1 (High Point Rd) to I-40	Truck/Rail
RALEIGH-DURHAM INTERNATIONAL AIRPORT Aviation Pkwy from I-540 Northern Wake Expressway to Airport Entrance	Airport
DIXIE PIPELINE CO. - APEX Terminal Entrance to NC 55 to US 1	Truck/Pipeline

NORFOLF SOUTHERN CORP. -WINSTON-SALEM	Truck/Rail
From I-40 Business, MLK Dr to US 3 11 to Williston Dr to Old Walkertown Rd to Terminal Entrance	
NC STATE PORTS AT MOREHEAD CITY	Port
Served by an Existing NHS Route	
NC STATE PORTS -WILMINGTON	Port
Served by an Existing NHS Route	
PETROLUM PIPELINE TERMINAL - SELMA	Truck/Pipeline
SR 1003 (from US 70 to SR 1928)	

Ohio

	Facility Type
TOLEDO-LUCAS COUNTY PORT AUTHORITY	Port
From I-280 (exit 9): NE on Front St (CR 508), SE on Millard Ave, E on Tiffin Ave to terminal entrance	
PORT FACILITY #2, #3 - COAL, ORE DOCKS	Port
From I-280 (exit 9): NE on Front St (CR 508), SE on Millard Ave, E on Tiffin Ave to terminal entrance	
CONRAIL "AIRLINE" TRAILER/CONTAINER TERM	Truck/Rail
From U.S. 20 (Reynolds Rd): E on Hill Rd (CR 30) to terminal entrance at Parkside Blvd (CR 521)	
CSX BULK INTERMODAL DISTRIBUTION SYSTEM	Truck/Rail
From I-75: east on Miami St (SR 6.5) to entrance on Oakdale Ave (CR 558)	
MID-STATES ELEVATOR RIVERFRONT FACILITY	Port
From I-75: east on Miami St (SR 65) to entrance on Oakdale Ave (CR 558)	
MAJOR GRAIN/BULK MATERIALS TERMINAL OPS	Truck/Rail
From I-75: north on South St, southeasterly on Kuhlman St to entrance to terminal	
MAUMEE RIVER PORT FACILITY	Port
From I-75: north on South St, southeasterly on Kuhlman St to entrance to terminal	
TOLEDO EXPRESS AIRPORT - BURLINGTON AIR	Airport
From I-80190: SW on SR 2, S and E on U.S. 20A/SR 295, N on Air Cargo Parkway, to airport entrance	
TRIPLE CROWN RAIL TRANSFER FACILITY	Truck/Rail
From U.S. 30 (on new location): north on SR 598 to Triple Crown Access Drive	
NORFOLK AND SOUTHERN COAL DOCKS	Port
From US 6: Mills St to Monroe St to Coal Docks (Mileage included with 13P)	
SANDUSKY SAND & GRAVEL CO.	Port
From SR 2: SR 101 NE to US 6, US 6 NE to McDonough St., McDonough St N to facility	
PORT OF HURON	Port
From SR 2: N on SR 13, E on U.S. 6, N on Tiffin, W on Temper, N on Meeker, W on Berlin to Port	
PINNEY DOCK AND TRANSPORT COMPANY	Port
From I-90: north on SR 11, West on SR 53 1, N on Parkgate Ave to terminal	
STARK INTERMODAL FREIGHT FACILITY	Truck/Rail
Served by an Existing NHS Route	
NORFOLK SOUTHERN DISCOVERY PARK	Truck/Rail
From I-270: North on Alum Creek Dr, NW on New World Road, W on Watkins Rd to terminal	
RICKENBACKER AIRPORT	Airport
From I-270: South on Alum Creek Dr (CR 122) to airport at Fred Haise Avenue	
COLUMBUS CONRAIL (BUCKEYE YARD)	Truck/Rail
From I-270: W on Roberts Rd, S on Westbelt Dr to Rail Yard at Trabue Rd	
MARYSVILLE CONRAIL RAILYARD	Truck/Rail
From U.S. 33: west on Honda Parkway to SR 739 (Stokes Rd), SR 739 (Honda Pkwy to railyard entrance (at intersection with SR 739))	
PIPELINE FUEL TERMINALS	Truck/Pipeline
From SR 202: southeasterly on Stanley Ave (CR 601), northerly on SR 201 to Shell Terminal Entrance	
From SR 4: northwesterly on Stanely Ave (CR 601) to connector #1 at SR 201	

DAYTON INTERNATIONAL AIRPORT — Airport
From Airport Access Rd: West on US. 40, north on Dog Leg Pike, east on Old Springfield Rd

WILMINGTON AIRPORT - AIRBORNE EXPRESS — Airport
From I-71 (exit 50): S on U.S. 68, E on U.S. 22 (& W US22DA), S on SR 73, W on Airport Rd to Terminal

TEXAS EASTERN & MANHATTAN PETRO PIPELINE — Truck/Pipeline
From I-75 (exit 32): 6 miles east on SR 122 to facility entrance
From l-71 (exit 45): west on SR 73, south on U.S. 42, west on SR 122 to facility entrance

11 INTERMODAL BARGE FAC. ALONG U.S. 50 — Port
From I-75: West on U.S. 50 along Ohio River to Indiana Border (serves 11 ports along the connector)

CINCINNATI NORFOLK SOUTHERN (UNION STA) — Truck/Rail
From I-75: S on Freeman Ave, W on W. Eighth St to terminal entrance

CINCINNATI CSXT (QUEENSGATE) — Truck/Rail
From I-75, W on Gest St, N on Dalton St, W on Findlay St to Terminal Entrance

WATERLOO COAL COMPANY — Port
From U.S. 52: SW on SR 522, NW on CR 527 to terminal entrance

ST. JO MARINE, INC.-OHIO RIV SAND&GRAVEL — Port
From SR 7: east on 54th St, north on N. Guernsey St. to port

RAYLE RIVER TERMINAL — Port
From SR 7: east on 54th St, south on N. Guernsey St. to port

PORT OF FAIRPORT HARBOR- UNION SAND'S — Port
From SR 44/2: NE on SR 2, NE on SR 283, NE on SR 535, NE on Fairport Rd, N on Water St to terminal

PORT OF FAIRPORT HARBOR - GRAND RIVER — Port
Williams (Headlands to Olive), Headlands (Williams to SR 44), Olive (Williams to SR 44)

PORT OF LORAIN - USS/KOBE STEEL CO. — Port
E 28th St (SR 57 to Entrance)

PORT OF LORAIN - AMCOR MARINE CORP. — Port
Served by an Existing NHS Route

PORT OF LORAIN - JONICK DOCK & TERMINAL — Port
From SR 57: east and north on SR 611 to Bridge Drive

PORT OF CLEVELAND - EAST BASIN — Port
From U.S. 20/U.S. 6/SR 2: North on E. 9th St, West on Erieside Avenue to Port
From SR 2: West on SR 2 Marginal Roads, North on W. 3rd Street to Port

PORT OF CLEVELAND - WEST BASIN — Port
From U.S. 6: N on W. 25th St, NE on Main Ave, NW on Elm St, N on River Rd to Port Entrance

PORT OF CLEVELAND -CUYAHOGA RIVER BERTHS — Port
From U.S. 422 (Broadway): SW on Lorain, southerly on Commercial Ave, SW on W. 3rd St to port

PORT OF CLEVELAND-BERTHS & RR/TRUCK TERM — Port
From I-490: south on W. 7th St, northeasterly on Quigley Ave, northwesterly on W. 3rd St to port

PORT OF CLEVELAND - MARATHON OIL CO. — Port
From I-77: south on E. 30th St (CR366), west on Pittsburgh Ave (SR14), south on Broadway (CR12)

NORFOLK -SOUTHERN RR CONTAINER PORT — Truck/Rail
From I-90: easterly on U.S. 422 (Broadway) to facility entrance at E. 9th Street

CLEVELAND HOPKINS INT'L AIRPORT — Airport
From I-71 (exit 237): west on Snow Rd, south on Airport Freeway (SR 237) to freight terminal
From Snow Road: North on Airport Freeway (SR 237) to passenger terminal

CONRAIL INTERSTATE TERMINAL WAREHOUSE — Truck/Rail
Chatfield Ave (Warehouse Dr to W 105th St), W 105th St (Chatfield to IR 71)

CONRAIL INTERMODAL & FLEXI-FLO BULK TERM — Truck/Rail
E 152nd St (Entrance to I-90)

MEDINA SUPPLY COMPANY & STONE YARD — Truck/Rail
From SR 18/57: south on State Road (CR 22), west on Smith Road [CR 4) to facility entrance

Oklahoma	Facility Type
WILL ROGERS WORLD AIRPORT Meridian Ave (Airport Rd to Terminal), Airport Rd (I-44 to Meridian Rd)	Airport
WILLIAMS PIPELINE STATION 2 1st St (33rd W Ave to Burlington Northern RR at 23rd St)	Truck/Pipeline
BURLINGTON NORTHERN RAILROAD 23rd St (BN Terminal to Southwest Ave), SW Ave (23rd St to I-244 Ramp)	Truck/Rail
TULSA INTERNATIONAL AIRPORT Served by an Existing NHS Route	Airport
PORT OF CATOOSA SR 266 (Port to US 169)	Port

Oregon	Facility Type
PORT OF ASTORIA Hamburg St, Industry St, Portway St between the Port and US 101	Port
PORT OF MORROW, BOARDMAN Boardman-Irrigon Rd (Ulhnan to Coyote St Rd), Ulhnan Blvd (Boardman to Marine), Marine Dr (Ulhnan to Tier 3 Access Rd), 084HC/ Laurel Rd (Boardman to I-84)	Port
PORT OF COOS BAY - OCEAN TERMINALS California Ave between Sherman Ave (US 10 1) and the Docks Florida Ave, Sheridan Ave between Sherman Ave (US 10 1) and Sheridan Ave	Port
PORT OF COOS BAY - ISTHMUS SLOUGH Newport Ave, Mullen St between US 101 and the Nickle and Chip Terminals	Port
BROOKLYN YARD (SP), PORTLAND Holgate Blvd between McLoughlin Blvd (or 99E) and SPRR Track	Truck/Rail
PORTLAND INTERNATIONAL AIRPORT Highway 30 (I-205 to 60th), 60th St (Hwy 30 to Columbia), Columbia Blvd (60th to MLK Blvd) 47th Ave (Columbia to Cornfoot), Comfoot Rd (47th to Alderwood), Alderwood (Comfoot to 82nd), Airtrans Rd (Cornfoot to Air Freight Terminals) 82nd Ave (Hwy 30 to Airport Way) Airport Way (I-205 to North Air Cargo)	Airport
WILLRIDGE YARDS Balboa Ave (Culebra to Yeon)	Truck/Rail
NW INDUSTRIAL AREA Front Ave (Kittridge to 61st), 61st St (Front to Culebra), Culebra Ave (61st to Balboa)	Truck/Pipeline
LAKE YARDS Front Ave (Nicolai to Kittridge), Nocolai St (Yeon Ave to Front)	Truck/Rail
ALBINA YARDS (UP), PORTLAND Interstate Ave (Going to Russell), Russell St (Interstate Ave to the Rail Facility), Going St (Basin to I-5)	Truck/Rail
PORT OF PORTLAND (TERMINAL 5) Port Access Rd between Lombard St and Terminal 5	Port
PORT OF PORTLAND (TERMINAL 6) N Pacific Gateway Blvd between N Marine Dr and Terminal 6	Port
PORT OF PORTLAND (TERMINAL 4) N Terminal Rd between Lombard St and Terminal 4	Port
EUGENE RELOAD FACILITIES, EUGENE Garfield St (6th to Cross), Cross St (Garfield to Cleveland), Cleveland St (Cross to Roosevelt), Roosevelt Blvd (Cleveland SR 99)	Truck/Rail

PORT OF COOS BAY - ROSEBURG TERMINALS Jordan Cove Rd (Private Rd to Transpacific), Transpacific Pkwy (Jordan Cove to US 101)	Port
SWAN ISLAND SHIP REPAIR YARD Going St. (Basin St. to I-5)	Port
PORT OF PORTLAND (TERMINALS 1 AND 2) Port Access Rd. (Yeon St to Front Ave)	Port

Pennsylvania

	Facility Type
PITTSBURGH INTERNATIONAL AIRPORT-AIR CARGO TERMINAL From Facility N and S on Business Rt. 60 and Connects with US 60	Airport
NEVILLE ISLAND GREIGHT CLUSTER Southeast on Neville Rd to PA 5 1 Northwest on Neville Rd, West on Grand Ave to I-79	Port
CONRAIL DOUBLE STACK INTERMODAL TERMINAL SE on Wall Ave to PA 48 (SR 0048) North on PA 48 to I-376	Truck/Rail
W ELIZABETH MONONGAHELA RIVER TERMINAL NE on New State Hwy (SR 0837) to PA 51 (SR 0051) Southwest on New St Hwy & SR 0837 to SR 1006 to Future Mon/Fayette Expressway	Port
DONORA INDUSTRIAL PARK TERMINAL SE on McKean Ave (SR 0837) to SR 1077 to SR 3013 to SR 0201 & Connects to I-70 Southeast on McKean Ave & SR 0837 to Coyle Curtain Rd to Future Mon/Fayette Expressway	Port
ATLANTIC PIPELINE CO. E on Mountain Home Rd (SR 3012) to Columbia Ave (SR 3016) or Woodrow Rd & N to US 422	Truck/Pipeline
PETROLEUM PRODUCTS CORP. TERMINAL Burns Ave to SR 0764 to Interchange of US 22	Truck/Pipeline
LUCKNOW YARD S on Industrial Rd to Wilderwood Park Dr to Cameron St North on Industrial Rd to Linglestown Rd (SR 0039) to US 22	Truck/Rail
CONRAIL DB STACK FACILITY AND TRIPLE CROWN W on Grayson Rd to Rupp Hill Rd to Paxton St to Penhar Dr to US 322	Truck/Rail
HARRISBURG INTERNATIONAL AIRPORT Served by an Existing NHS Route	Airport
PORT OF ERIE Served by an Existing NHS Route	Port
ALLENTOWN/BETHLEHEM PIGGY BACK YARD E on River St to PA 378	Truck/Rail
TIOGA PIPELINE FACILITIES Bath St (Facility to I-95) and (Facility to Alleghany Ave to I-95)	Truck/Pipeline
TIOGA PORT FACILITIES Delaware Ave to Castor Ave to I-95; Delaware Ave to Alleghany Ave to I-95	Port
MORRISVILLE TRUCK/RAIL FACILITY E Cabot Blvd to Oxford Valley Rd to US 1	Truck/Rail
PHIL. BULK INTERMODAL DIST SERVICES TERMINAL East on Moore St, South on 34th St to Maiden Lane to I-76 From I-76, Wharton St, South on Warfield St to Moore St	Truck/Rail
S PHIL. PORT COMPLEX North on Old Delaware Ave to Columbus Blvd	Port
S PHIL. RAIL COMPLEX North on Old Delaware Ave to Columbus Blvd (same as S. Phil. Port Complex)	Truck/Rail
PENN. TERMINALS North on Salville Ave, East on Industrial Hwy (PA 291), North on Stewart Ave (SR 2033) to I-95	Port

PHILADELPHIA INTERNATIONAL AIRPORT - FREIGHT FACILITY North on Scott Way, Northeast on Penrose Ave (SR 0291) to I-95 NB North on Scott Way, Northeast on Bartram Ave to I-95 SB East on Hog Island Ave, North on Fort Mifflin Ave to Enterprise Ave to I-95 NB West Enterprise Ave to Island Ave to I-95 SB	Airport
TWIN OAKS TRUCK/RAIL TERMINAL Bethel Rd to US 322 (Conchester Rd)	Truck/Rail

Puerto Rico

	Facility Type
RAFAEL HERNANDEZ AIRPORT, AGUADILLA From PR-2 (km 124.5): North 2.9 miles on PR-107 to Old Ramey Air Force Base From PR-2: NW 5.8 mi on PR-110 to Old Ramey AFB	Airport
PONCE PORT, PONCE From PR-52 (km 104.9): South 1.1 miles on PR-14 to port	Port
FAJARDO PORT, FAJARDO From PR-3 (km 43.4): southeasterly 1.7 mi on PR-194 and east 0.4 mi on Osvaldo Ave, southeast 0.07 mi on PR-987, and easterly on PR- 195 to port	Port
LUIS MUNOZ MARIN INTL AIRPORT, SAN JUAN Served by an Existing NHS Route	Airport
SAN JUAN PORT, SAN JUAN (SOUTH) Served by an Existing NHS Route	Port
SAN JUAN PORT, SAN JUAN (NORTH) From PR-25 going west on PR-1 to the port	Port

Rhode Island

	Facility Type
PORT OF PROVIDENCE From I-95: E on Thurbers Ave 0.1 mi, S on Allens Ave 1.7 mi, E on Ernest St 0.3 mi to terminal	Port
TF GREEN STATE AIRPORT, WARWICK From I-95 (ex 13): easterly 1.6 mi on Airport Connector to Passenger Terminal	Airport
QUONSET POINT/DAVISVILLE INDUSTRIAL PK. From RI 4: SE 2.65 mi on RI 403 to Post Rd (US 1)	Port

South Carolina

	Facility Type
GREENVILLE-SPARTANBURG REGIONAL AIRPORT Gateway Dr (Terminal to I-85	Airport
COLUMBIA METROPOLITAN AIRPORT S-378 from SC 302 to S-32-1500	Airport
CHARLESTON RAIL FACILITY (CSX) S-62 (Montague Ave), S-141 1 (Blossom St) between I-26 and the Rail Freight Yard	Truck/Rail
NORTH CHARLESTON RAIL FACILITY (NORFOLK-SOUTHERN) W Montague (I-26 to Marriott), Marriott Dr (Montague to Freight Yard)	Truck/Rail
NORTH CHARLESTON TERMINAL Remount Rd (Terminal to I-26)	Port
WAND0 TERMINAL Served by an Existing NHS Route	Port
COLUMBUS ST/UNION PIER TERMINAL East Bay Street South to Charlotte Street, East to Washington St., South to the Port	Port
PORT OF GEORGETOWN SC 106 (US 17 to Dock St), SC 103 (US 17 to SC 106)	Port

South Dakota	Facility Type
FREMAR FARMERS CO-OP GRAIN ELEVATOR, MARION SD 44, FAS 6355 from US 81 to Marion	Truck/Rail
HUTTING ELEVATOR CO. GRAIN ELEVATOR, CANTON US 18 from I-29 to Canton	Truck/Rail
JOE FOSS FIELD, SIOUX FALLS Cliff Ave, Benson Rd, Minnesota Ave from I-90 to the Airport Entrance Russell St (Minnesota Ave at the Airport Entrance to I-29)	Airport

Tennessee	Facility Type
COLONIAL PIPELINE - CHATANOOGA Jersey Pike from Enterprise Park Dr. to SR-153	Truck/Pipeline
MID SOUTH TERMINALS Hudson Rd. to Pineville Rd. to Moccasin Bend Rd. to Hamm Rd. to S. R. 29	Port
J.I.T. TERMINALS - CHATTANOOGA Manufactures Rd from SR-29 to Terminal Entrance	Port
WLCAN MATERIALS CO. - CHATTANOOGA River St from Evans St to Riverfront Pkwy (SR-58)	Port
SOUTHERN FOUNDARY SUPPLY - CHATTANOOGA W 19th St from Riverfront Pkwy (SR-58) to the Port Entrance	Port
CSX CORPORATION - KINGSPORT Lincoln St from John B Dennis Hwy (SR-93) to Facility Entrance	Truck/Rail
COLOIAL & PLANTATION PIPELINE CO. - KNOXVILLE Middlebrook Pike (SR-169), 44th St, Western Ave from the Terminal Entrance to I-75	Truck/Pipeline
FORREST YARDS - MEMPHIS NORFOLK SOUTHERN Southern Ave from Lamar Ave (SR-4) to E Parkway (SR-277) E Parkway (SR-277) from Lamar Ave (SR-4) to Southern Ave Spottswood Ave from Airways (SR-277) to Forrest Yard	Truck/Rail
PRESIDENT'S ISLAND - MEMPHIS McLemore Ave, Riverside Blvd, Jack Capley Causeway, Harbor Ave, Channel Ave, Jetty St Between I-55 & Port	Port
MEMPHIS INTERNATIONAL AIRPORT Tchulahoma and Democrat Rd between Lamar AVE (SR-4) and Airways Blvd Plough Blvd between I-240 and the Airport Entrance	Airport
LEEWOOD YARDS Jackson Ave (SR-14) and Chelsea Ave between I-40 and Warford St	Truck/Rail
TENNESSEE YARDS - MEMPHIS BURLINGTON NOR Shelby Dr between Lamar Ave (SR-4) and the Tennessee Yard	Truck/Rail
JOHNSTON YARDS - MEMPHIS ILLINOIS CENTER Mallory Ave and Riverport Rd between I-55 and Rail Yard	Truck/Rail
RADNOR YARDS - NASHVILLE CSX Armory Ave and Sidco Dr between I-65 and Harding Place	Truck/Rail

Texas	Facility Type
DIAMOND SHAMROCK/PHILLIPS (AMARILLO) Loop 335 and Western St between the Plant and I-40	Truck/Pipeline
ROBERT MUELLER MUNICIPAL AIRPORT (AUSTIN) Served by an Existing NHS Route	Airport

PORT OF CORPUS CHRIST1 #1	Port
Upriver Rd (IH-37 to the Citgo Plant)	
PORT OF CORPUS CHRIST1 #2	Port
Corn Products Rd (IH-37 to the Terminal at Valero)	
PORT OF CORPUS CHRIST1 #3	Port
Navigation Blvd between IH-37 and the Corpus Christi Public Elevator Terminal	
PORT OF CORPUS CHRIST1 #4	Port
Buddy Lawrence between IH-37 and the Termini at American Chrome and Chemical	
PORT OF CORPUS CHRIST1 #5	Port
Port Ave between IH-37 and the Termini at Corpus Christi Public Compress	
LAREDO INTERNATIONAL AIRPORT	Airport
Bartlett St (US 59 to Maher), Maher Ave (Bartlett to Pappas)	
Airpark Dr (facility to US 59) - proposed	
Airport Access Rd (Terminal to Loop 20)	
PORT OF LAREDO (UNION PACIFIC RR)	Truck/Rail
I-35 Frontage Rd between Milo (LP 20) Exit Ramp and the Facility Access Rd (Private)	
I-35 Frontage Rd between Unitech Interchange and the Facility Access Rd (Private)	
MCALLEN EC DEV. CORP. & FOREIGN TRADE ZONE	Truck/Rail
FM 1016 (Ware Rd to Spur 115)	
PORT OF BROWNSVILLE	Port
SH 48 (Gate at the Fishing Harbor to FM 5 11)	
BROWNSVILLE S PADRE ISLAND INTERNATIONAL	Airport
Billy Mitchell Blvd (FM 2519) (Airport Terminal to Boca Chica Blvd (SH 4))	
PORT OF HARLINGEN	Port
FM 106 (Port to Loop 499)	
AN ANTONIO INTERNATIONAL AIRPORT	Airport
Airport Blvd between the Airport Terminal and I-4 10	
SOUTHER PACIFIC (SAN ANTONIO)	Truck/Rail
Sherman St and Pine St between the Terminal and I-35	
DIAMOND SHAMROCK TERMINAL (SAN ANTONIO)	Truck/Pipeline
US 28 1 between the Terminal Entrance and I-4 10	
KOCH REFINING COMPANY (SAN ANTONIO)	Truck/Pipeline
Pop Gunn between Houston and the Terminal Entrance	
COASTAL STATES TERMINAL (SAN ANTONIO)	Truck/Pipeline
Corner Parkway between I-4 10 and the Terminal Entrance	
EL PASO INTERNATIONAL AIRPORT	Airport
Terminal Dr between the Airport and Airway Blvd	
SANTA FE RAILROAD YARD (EL PASO)	Truck/Rail
Served by an Existing NHS Route	
SOUTHERN PACIFIC RR ALFALFA YARD (EL PASO)	Truck/Rail
Dodge Rd between the Railroad yard and North Loop Dr	
CHEVRON REFINERY (EL PASO)	Truck/Pipeline
Trowbridge Dr between I- 10 and North Loop Dr	
TURNING BASIN TERMINAL (S HOUSTON)	Port
75th St between Navigation Blvd and the Terminal	
BAYPORT TERMINAL (HOUSTON)	Port
Port Rd between SH 146 and the Terminal	
JACINTOPORT TERMINAL (HOUSTON)	Port
Jacintoport Blvd between Beltway 8 and the Terminal	
South Sheldon Rd between I- 10 and the Terminal	
MANCHESTER TERMINAL CORP. (HOUSTON)	Port
Manchester between East Loop 610 and the Terminal	
PORT OF TEXAS CITY	Port
Served by an Existing NHS Route	

S.P. HOUSTON INTERMODAL HUB Lockwood between the Terminal and I- 10	Truck/Rail
U.P. SETTEGAST YARD (HOUSTON) Kirkpatrick Blvd between the Terminal and I-61 0	Truck/Rail
M.P. GMAC YARD Hardy Rd between the Terminal and FM-1960 (Hiumble Westfield Rd)	Truck/Rail
HOUSTON INTERCONTINENTAL AIRPORT No Connection Necessary	Airport
ELLINGTON FIELD (HOUSTON) Served by an Existing NHS Route	Airport
BARBOURS CUT CONTAINER TERMINAL Served by an Existing NHS Route	Port
BRAZOSPORT TURNING BASIN (FREEPORT) FM-1495 between SH 288 and the Terminal	Port
PORT OF GALVESTON Served by an Existing NHS Route	Port
TURNING BASIN TERMINAL (HOUSTON) Served by an Existing NHS Route	Port
PORT OF CORPUS CHRIST1 #6 Navigation Blvd between IH 37 and the Corpus Christi Public Elevator Terminal (Same as #3)	Port
GATX TERMINALS CORP. Jefferson (Facility to SR 225)	Truck/Pipeline
PHILLIPS PIPELINE CO. Jefferson (Facility to SR 225)... (Same as GATX Terminal Corp.)	Truck/Pipeline
STAR ENTERPRISE/TEXACO Liberty between the Terminal and US 59	Truck/Pipeline
A.T.S.F. INTERMODAL FACILITY Served by an Existing NHS Route	Truck/Rail
S.P. BARBOURS CUT INTERMODAL TERMINAL Served by an Existing NHS Route	Truck/Rail
DFW INTERNATIONAL AIRPORT International Pkwy (No Connection Necessary)	Airport
DIAMOND SHAMROCK CORP. BULK FUELFACILITY Brumlow Ave between the Facility and SH 26 (Colleyville Blvd)	Truck/Pipeline
EXXON BULK FUEL FACILITY (DFW) Carl Rd (Facility to SH 183 (Airport Freeway))	Truck/Pipeline
UNION PACIFIC INTERMODAL FACILITY (DFW) Sam Houston (Fomey to UPRR), Fomey Rd (Town East to Terminal), Fomey Rd (US 80 to Town East), South Parkway (US 80 to Fomey)	Truck/Rail
SANATA FE RAILWAY INTERMODAL FACILITY (DFW) Keller Haslet Rd between the Facility and I-35	Truck/Rail
UNION PACIFIC INTERMODAL CENTER (ARLINGTON) Served by an Existing NHS Route	Truck/Rail
PORT OF PORT ARTHUR Houston Ave (SR 87 and the Port)	Port
DEERPARK CLUSTER Crosby/Lynchburg Rd (Terminal to I-1 0)	Truck/Pipeline
GALENA PARK CLUSTER Served by an Existing NHS Route	Truck/Pipeline
JACINTOPORT CLUSTER Jacintoport Blvd between Beltway 8 and the Terminal (Same as Jacintoport Terminal) S Sheldon Rd between I-10 and the Terminal (Same as Jacintoport Terminal)	Truck/Pipeline

ALAMEDA CLUSTER Served by an Existing NHS Route	Truck/Pipeline
PORT OF BEAUMONT US 90 (I-IO to Calder), Calder (US 90 to Main), Main (Calder to Port)	Port

Utah

	Facility Type
SALT LAKE INTERNATIONAL AIRPORT Terminal to Route 2370 to SR 154 to I-80	Airport
SHARP TRUCK/RAIL FACILITY Terminal to SR 78 to SR 28	Truck/Rail
BECK STREET TRUCK/RAIL FACILITY Terminal to SR 89 to SR 268 to I-15	Truck/Rail
CHEVRON OIL REFINERY 2400 North to on/off Ramp of I- 15	Truck/Pipeline
AMOCO OIL REFINERY 900 North to 400 West to SR 89 to SR 268 to I-15	Truck/Pipeline

Vermont

	Facility Type
VERMONT RAILWAY YARD, BURLINGTON Battery St, Main St, US 2 between the Rail Yard and I-89 Proposed Southern Connector between the Rail Yard and I-89	Truck/Rail

Virginia

	Facility Type
NORFOLK INTERNATIONAL AIRPORT Norview Ave. (Entrance to I-64)	Airport
RICHMOND INTERNATIONAL AIRPORT Fox Rd. (Entrance to Airport Dr.), Airport Dr (Fox to Rt. 60), Rt. 156 (Rt60 to I-64)	Airport
ROANOKE MUNICIPAL AIRPORT Aviation Rd. (Entrance to Rt 101)	Airport
DULLES INTERNATIONAL AIRPORT Served by an Existing NHS Route	Airport
PORT OF HAMPTON RDS - LAMBERTS POINT Orapax Rd. (Entrance to Raleigh Ave.), Raleigh Ave (Orapax to S.R. 337)	Port
PORT OF HAMPTON - NEWPORT NEWS TERMINAL 25th St. (Entrance to Huntington), Huntington Ave (25th to 26th), 26th Str. (Huntington to I-664) 25th St. (Entrance to Huntington), Huntington (25th to 23rd), 23rd (Huntington to I-664)	Port
PORT OF HAMPTON RDS - NORFOLK INTL TERM. Served by an Existing NHS Route	Port
PORT OF HAMPTON ROADS - PORTSMOUTH TERM. Served by an Existing NHS Route	Port
PORT OF RICHMOND - DEEPWATER TERM. Deep Water Rd. (Ent. to Connector), Connector Rd. (DW Rd. to Comm.), Commerce Rd (Conn. Rd to I-95)	Port
ALEXANDRIA INTERMODAL - NORFOLK SOUTHERN Metro Rd (Entrance to Van Dom St), Van Dom St (Metro Rd to I-95).	Truck/Rail
CHESAPEAKE INTERMODAL - NORFOLK SOUTHERN Atlantic Ave. (Entrance to S.R. 168), S.R. 168 (Atlantic to I-64)	Truck/Rail
VIRGINIA INLAND PORT Rt. 340 (Entrance to I-66)	Truck/Rail

Washington	Facility Type
POKANE INTERNATIONAL AIRPORT Airport Dr (U.S. 2 to Airport)	Airport
UNION PACIFIC ARGO YARD, SEATTLE Served by an Existing NHS Route	Truck/Rail
PORT OF VANCOUVER SR 501 (I-5 to Port)	Port
PORT OF KALAMA Served by an Existing NHS Route	Port
PORT OF LONGVIEW SR 432 (SR 4 to I-5), SR 433 (SR 432 to Port)	Port
PORT OF OLYMPIA From I-5: Via Henderson Blvd. and Plum Street to Port Entrance at State Street	Port
PORT OF PORT ANGELES Served by an Existing NHS Route	Port
PORT OF ANACORTES Served by an Existing NHS Route	Port
PORT OF BELLINGHAM From I-5: Southerly on Meridian St, Squallicum Way, Roeder Ave., Chestnut St and Cornwall Ave	Port
BURLINGTON NORTHERN INTERBAY YD, SEATTLE Served by an Existing NHS Route	Truck/Rail
BN-UP PORT OF TACOMA YARDS Served by an Existing NHS Route	Truck/Rail
BN-SIG YARD (SEATTLE INTL GATEWAY) Served by an Existing NHS Route	Truck/Rail
PORT OF EVERETT W Marine View Dr. (Port to Pacific), Everett Ave (Marine View to I-5S) and Maple St ramps to I-5N	Port
ELLIOT BAY-FLORIDA ST. PORT (SEATTLE) 1 lth Ave (Spokane St to Port), SW Spokane St (Chelan to E Marginal Way)	Port
SEA-TAC INTERNATIONAL AIRPORT No Additional Connector Needed - Direct Access from Airport Access Road off of SR 5 18	Airport
PORT OF TACOMA Port of Tacoma Rd (I-5 to E 1 lth St)	Port
ELLIOT BAY-ALASKAN WAY PORT (SEATTLE) Served by an Existing NHS Route	Port
BN-SOUTH SEATTLE YARD From Boeing Access Rd (just off I-5): North on Airport Way S to Facility Entrance at Hardy Street	Truck/Rail
BN - YARDLEY (SPOKANE) No Additional Connector Needed - Direct Access from Fancher Road	Truck/Rail

West Virginia	Facility Type
CLUSTER OF DOWNTOWN HUNTINGTON PORTS Bridge to Ohio (OH State line to US-60EB), US-60EB (WV-527 to 8th), WV-527 (US-60EB to WV-152), WV-527NB (US-60EB to WV-527), WV-152 (l-64 to WV-527)	Port
CLUSTER OF PORTS E OF HUNTINGTON ON OHIO From I-64 (ex 15): W and N 3.6 mi on U.S. 60, E 6.0 mi on WV 2 to port	Port

Wisconsin	Facility Type
GENERAL MITCHELL AIRPORT, MILWAUKEE Mitchell Field Main Access Rd. between Howell Av. (SR 38) and Terminal - Ext. of NHS Route	Airport
PORT OF SUPERIOR #1 Dock St, N 1st St, Tower Ave between SR 35 and the Facility	Port
PORT OF SUPERIOR #2 Main St, N 5th St between US 53 and the Facility	Port
PORT OF SUPERIOR #3 Winter St, Susquhanna Ave, Belknap St between US 2 and the Facility	Port
PORT OF MILWAUKEE #1 Lincoln Memorial Dr between Carferry Dr and E Scott St Carferry Dr between Lincoln Memorial Dr and the Dead End Bay St between Lincoln Memorial Dr and Carferry Dr	Port
PORT OF MILWAUKEE #2 Harbor Dr between Bay St and E Scott Dr E Scott Dr between Lincoln Memorial Dr and Harbor Dr	Port
PORT OF MILWAUKEE #3 Becher St between S 5th St and E Bay St E Bay St between Becher Ave and S Lenox St E Lincoln Viaduct between S Lenox St and Lincoln Memorial Dr	Port
PORT OF GREEN BAY #1 Hurlbut St, Bylsby Ave and Atkinson Dr. between I-43 and the Port Facility	Port
PORT OF GREEN BAY #2 Bylsby Ave, Prairie Ave, Broadway Ave, Alexander Ave, Alexander St, Mather St, James St, McDonald St between I-43 & Port Facility	Port
PORT OF GREEN BAY #3 Broadway Av, State St, 7th St, Motor St, 9th St, Lombardi Ave, Ashland Ave between SR 172 and the Port Facility	Port
PORT OF OPERATORS OF LACROSSE #1 Front St between Cass St and the Port Facility King St between Front St and 3rd St (US 53)	Port
PORT OPERATORS OF LACROSSE #2 Clinton St, Bainbridge St between Rose Ave and the Port Facility	Port
PORT OPERATORS OF PRAIRE DU CHIEN #1 Main St and Blackhawk Ave between US 18 and the Port Facility	Port
PORT OF OPERATORS OF PRAIRE DU CHIEN #2 Main St, Blackhawk Ave, Villa Louis St between US 18 and the Port Facility - Ext. of Connection to Port Prairie Du Chien #1	Port
TRUCK/RAIL FACILITY, MILWAUKEE Same as Port of Milwaukee #1	Truck/Rail
GREEN BAY INTERMODAL TERMINAL Same as Port of Green Bay #1	Truck/Rail